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NUMBER 4

BIRDS AND EUCALYPTUS TREES

By JOHN McB. ROBERTSON

Forty-five years ago the area surrounding my home at Buena Park, California, was a treeless plain. The first settlers planted trees as windbreaks, to protect their crops and orchards from the desert winds, as shade trees about their homes, and in groves for use as fuel. The tree most commonly used was the Blue Gum (*Eucalyptus globulus*). This tree, brought here from Australia, has become so much a part of the southern California lowland landscape that it seems like a native. J. Smeaton Chase, in his "California Coast Trails", pays a glowing tribute to this tree, from which I will quote: "The landscapes of California have been greatly enriched by the acclimatization here of the eucalyptus. It is not often that the presence of an imported ingredient adds a really natural element to the charm of scenery; but the eucalyptus, especially the *globulus* variety that has become so common throughout the State, has so truly native an appearance that it seems as if its introduction from Australia must have been more in the nature of a home-coming than of an adoption."

It is of interest to see in what measure our birds have adopted this alien tree and put it to their own uses. The planting of trees of any kind in a naturally treeless country is sure to have a marked effect on the bird life of that country. When such planting is a part of the agricultural settlement, in which the cultivation and irrigation of a variety of crops is involved, it is not possible to judge the extent of influence on bird life of the trees alone, as they constitute only one of a number of factors.

I have noticed for a number of years that the trees about my home are decidedly useful to many birds, and I will try to sum up my observations briefly.

The blue gum planted in close grove formation grows straight and tall; the lower branches are shaded out and the trees are all very much alike, except around the edges where they expand somewhat to meet the light. On the other hand, trees spaced far apart, spread out, and each tree becomes an individual, unlike any of its fellows. It is with this type of tree that most of my observations deal.

The influence of trees on bird life may be divided into three main factors: shelter, nesting sites, and food. Shelter is the first and most universal factor, it may be shelter from the wind, from the heat of the sun or from enemies; it may

be temporary, or it may consist of regular nocturnal or diurnal roosting places that afford a certain security to the bird. Probably all of the local bird species, except the strictly terrestrial ones, make some use of the eucalyptus trees for shelter. Valley Quail (*Lophortyx californica vallicola*) and Gambel Sparrows (*Zonotrichia leucophrys gambeli*) have been observed going to roost in them and doubtless many other birds use them in this way, while the diurnal sleepers, the Barn Owl (*Aluco pratincola*) and the Screech Owl (*Otus asio quercurinus*), occupy the trees during the day. When a grove is near a body of water it sometimes shelters Black-crowned Night Herons (*Nycticorax nycticorax*) during the day. This factor of shelter is not an exclusive attribute of the eucalyptus, however, and might be supplied as well or better by some other tree.

The next factor to be considered is that of nesting sites. The loose bark of the blue gum seems to have been designed especially for Linnets (*Carpodacus mexicanus frontalis*) to nest in. They build behind slabs of bark on the trunks or larger limbs, or in accumulations of bark in the crotches. The bark sometimes betrays their confidence, for a rain with strong winds in the late spring often destroys their nests. Another bird that used a bark filled crotch for a nesting site was the Screech Owl whose history I have recorded (*Condor*, xxvii, 1925, pp. 35-36). The Bullock Oriole (*Icterus bullocki*) builds in the pendent clumps of dense foliage on the tips of small branches, high above the ground; in one instance, an Arizona Hooded Oriole (*Icterus cucullatus nelsoni*) built in a blue gum instead of the usual palm, remaining true to local custom, however, by using palm fiber almost exclusively in the nest.

Mourning Doves (*Zenaidura macroura marginella*) select the larger horizontal limbs near the ground for their frail platforms; Brown Towhees (*Pipilo fuscus crissalis*) sometimes build in thick growth or accumulations of bark if not too far above the ground. Green-backed Goldfinches (*Spinus psaltria hesperophilus*), Lawrence Goldfinches (*Spinus lawrencei*), and Lark Sparrows (*Chondestes grammacus strigatus*) build at moderate elevations in the thick foliage; Western Kingbirds (*Tyrannus verticalis*) and Cassin Kingbirds (*Tyrannus vociferans*) select open crotches near the tree tops, where they may have a wide view of the surrounding country and from which they defy the world to meddle with their affairs. Other birds that have nested in eucalyptus trees near my home are: Brewer Blackbird (*Euphagus cyanocephalus*), California Shrike (*Lanius ludovicianus gambeli*), Anna Hummingbird (*Calypte anna*), Black-chinned Hummingbird (*Archilochus alexandri*), English Sparrow (*Passer domesticus*), and Dwarf Cowbird (*Molothrus ater obscurus*), the last in a second-hand manner by laying eggs in nests of the Linnet.

The blue gum blossoms throughout the winter months, different trees showing great variation in time so that some flowers may be found from November until April. The blossoms attract bees and many other kinds of insects and are attractive to some birds, either for the insects or the nectar, I do not know which. Birds observed feeding about the flowers are: Audubon Warbler (*Dendroica auduboni*), Cedar Waxwing (*Bombycilla cedrorum*), Anna Hummingbird, Allen Hummingbird (*Selasphorus allenii*), and Rufous Hummingbird (*Selasphorus rufus*). The Cedar Waxwing is an irregular spring visitor and, if present at all, is apt to be found about the eucalyptus flowers. The Allen and Rufous hummingbirds announce their arrival in early spring by their peculiar staccato buzz about those trees that are in flower at the time.

But it is the seed eaters that reap the greatest harvest from this tree. The small black seeds are produced in great abundance; they ripen in fall and winter and sift to the ground leaving the empty pod on the tree, or pods and all fall to

the ground. The winter visitors get most of this food; the following birds have been seen to eat these seeds: Gambel Sparrow, Puget Sound Sparrow (*Zonotrichia leucophrys pugetensis*), Golden-crowned Sparrow (*Zonotrichia coronata*), Willow Goldfinch (*Spinus tristis salicamans*), Green-backed Goldfinch, Lawrence Goldfinch, Pine Siskin (*Spinus pinus*), Brown Towhee, Lark Sparrow, Lincoln Sparrow (*Melospiza lincolni*), and Sierra Junco (*Junco oreganus thurberi*). The Lincoln Sparrow is not common here, but some winters a single bird will be found feeding in the same spot under the trees day after day. Pine Siskins have been seen here only between March 16 and April 10, 1925, when a small flock fed daily, getting the seeds from the pods on the trees or on the ground. It is interesting to see a Willow Goldfinch loosen the seeds from the pods by pecking at it and sometimes picking it up and flipping it to one side with a quick jerk of the head, then following it up to get the scattered seeds.

Then the trees are put to other uses. Dead trees soon lose their foliage and bark, but stand, stark and bare, for many years. These furnish favorite perches for Sparrow Hawks (*Falco sparverius*) and Pigeon Hawks (*Falco columbarius*) in winter, and for Wood Pewees (*Myiochanes richardsoni*) and Olive-sided Flycatchers (*Nuttallornis borealis*) as they migrate in spring and fall. These trees are not very hospitable to woodpeckers, because of the hardness of the wood, but on one occasion a small flock of California Woodpeckers (*Balanosphyra formicivora bairdi*) spent about a month harvesting walnuts from a neglected orchard near by and storing them in the longitudinal cracks in a number of dead trees near my home; they did not stay to make any use of these nuts, but left, as soon as the supply of nuts ran out, and never returned. This is at least ten miles from the closest part of the normal range of this bird. Red-shafted Flickers (*Colaptes cafer collaris*) sometimes work on dead trees when the sapwood is infested with borers, and they sometimes dig out termites around the bases of eucalyptus fence posts. Red-tailed Hawks (*Buteo borealis calurus*) regularly use certain trees, usually live ones, as vantage points from which to watch for pocket gophers or other prey.

I have mentioned thirty-eight species of birds that have been seen to make some use of the eucalyptus trees near my home; and doubtless, in other areas, where other birds are present, the list could be extended indefinitely, showing that our native birds are on the alert for the advantages offered by any exotic tree introduced by man.

Buena Park, California, April 1, 1930.

WINTER HABITS OF THE HEPBURN ROSY FINCH
AT CLARKSTON, WASHINGTON

WITH FOUR ILLUSTRATIONS

By DANA JACKSON LEFFINGWELL and ANNE MACLAY LEFFINGWELL

This study of the Hepburn Rosy Finch (*Leucosticte tephrocotis littoralis*) was begun in December, 1927, when, on our first visit to the vicinity of Clarkston, Washington, we observed the birds seeking roosting places in the abandoned nests of Cliff Swallows. These nests were clustered by the hundreds against the sheer rugged surface of the basaltic "rimrock" outcrop known locally as Swallow Nest Rock or Bird Rock. This rock, situated about 300 feet from the Snake River, presents an easterly face of columnar basalt, rising perpendicularly about 200 feet, and it is approximately 650 feet long at its base. Toward the southern end is a small seep-basin with a constant supply of water dripping from the overhanging rocks. The region, which is characteristic of the Snake River cañon, lies in the arid Transition life zone. Except for a few wild cherries, willows and small poplars along the river bank, the vegetation consists almost entirely of the following plants: Russian thistle, *Salsola kali*; grasses, the most prominent being *Sporobolus cryptandrus*; two species of mustard, *Sisymbrium altissimum* and *Thelopodium laciniatum*; sunflower, *Helianthus annuus*; rabbit brush, *Chrysothamnus nauseosus*; and sage, *Artemisia dracunculus*.

Our notes represent the findings of four years' observation of the winter habits of *Leucosticte tephrocotis littoralis*. Although the other races of the species are probably similar, we have confined our investigation to the one subspecies, *littoralis*. At Clarkston members of this race far outnumber the Gray-crowned, *L. t. tephrocotis*, there being often none of the latter observed in an entire flock of several hundred birds. A conservative estimate of the proportion of Hepburn to Gray-crowned was about nineteen to one.

Dawson (1909) has described the Leucosticte as the "patron saint of the mountaineer," for it spends the greater portion of the year near the snow line at probably higher elevations than any other North American bird. The birds appear in the region of Clarkston early in November, doubtless driven from the breeding grounds by the severe weather, and they remain until well past the middle of March. One early arrival was observed in the vicinity of Pullman, Washington, as early as October 27, 1929, but the earliest record of arrival at Swallow Rock is November 3, 1928, and the latest recorded date of spring departure is March 18, 1928.

In the course of our work thirty-one specimens of *littoralis* were collected, which are now in the collection of the Charles R. Conner Museum, State College of Washington at Pullman. The following notes are based on this series.

Description and plumage. As with many genera, there has been some confusion in the taxonomy of the several forms. Due to the scanty knowledge of the life histories of the Rosy Finches much specific color variation was early attributed to seasonal plumage variation. Coues (Birds of the Northwest, 1874, p. 111) states that due to the great variability in the extent of the ash of the head it was impossible to draw a dividing line and that "it is necessary, therefore, to treat *griseinucha* as a variety of *tephrocotis*." As stated in Coues' Key (p. 352), it does not seem to be necessary to recognize more than one variety, "*campestris*" of Baird being referable to *tephrocotis* proper, and "*littoralis*" of Baird agreeing sufficiently with "var. *griseinucha*."

Molting is practically complete before the fall migration begins, though early in November a few birds were observed at Clarkston in much worn breeding plumage. Birds taken in late November, December and January were in complete winter plumage, the feathers of the breast and sides showing full white tips. As early as February 1, however, feather wear was evident, while birds taken at the end of that month had uniform chestnut brown on the breast and bright rose on the flanks.

The Hepburn Rosy Finch is similar in the general body color to *tephrocotis*, the greatest difference occurring in the head coloring. The sides of the head are partly, or wholly, gray. In some cases the entire head and throat, except for the black patch on the forehead, are light ash-gray. Our notes indicate that the greatest variability is in the extension of the gray on the chin and throat. The usual dark brown throat is often mottled with irregular groups of gray feathers. In some there is almost no brown, giving the appearance of a definite ring entirely separating the body and head coloring. The chin is usually slightly gray but in many of our specimens no gray whatsoever is evident. The brown of the throat may be merely an extension of the chocolate of the breast though it may be much darker, tending to be nearly black.

The black cap is characteristic of the species, though the size of the cap is decidedly variable. In many cases it covers only the top of the head and is well separated from the gray, which is continuous across the neck. In other specimens, however, the dark cap blends into the brown of the back, leaving the gray area more or less parted. A few birds were noted in which the whole head was ashy gray, the dark cap being entirely lacking.

The intensity and general extent of the pink on the sides and belly varies considerably in the adult birds. The under tail coverts were tipped with rosy on some birds, with dusky white on others. On February 18, the plumage was bright and clean and the pink was intense.

The immature birds are almost uniformly brownish in color and lack the rosy tints. Early in January, 1931, several birds of this plumage were seen in the flock. They were more pugnacious than the adults and were seen to perch on the swallows' nests and scold noisily. They were small, very dark, and the bills were dusky throughout. Somewhat later in the same month we noted that the gray of the head was mixed with brown and the rosy of the flanks showed indistinctly.

Measurements and weights of 30 birds were recorded; 9 females gave, as averages, length 173.4 mm., extent 302.4 mm., weight 26.5 g.; 21 males averaged, 178.2 mm., extent 306.2 mm., weight 28.5 g.

Distribution. The Hepburn Rosy Finch breeds above timberline (Alpine-Arctic zone) in the coast ranges, the Cascades and the Rocky Mountains (Brooks and Swarth, Pac. Coast Avif. No. 17, 1925, p. 88). Its summer range extends from the Three Sisters and Steens Mountains, Oregon, where it is thought to breed (*epis.*, Biol. Survey), and the Bitter Root and Cabinet mountains, Idaho (Moody, Bird-Lore, XII, 1910, p. 108), to Bern Creek (Williams, Can. Field-Nat., XXXIX, 1925, p. 71) and Seward, Alaska. It is found occasionally near the coast of British Columbia and Washington but at high elevations, as shown in figure 31. Its winter range almost duplicates the breeding range, the northernmost record being from Kodiak, Alaska. It is found at lower elevations as far east as Minneapolis (Cantwell, Auk, VI, 1889, p. 341), and south along the mountain ranges from Fort Keogh, Montana (Thorne, Auk, XII, 1895, p. 216), Douglas and Fort Fetterman, Wyoming (Knight, Wyoming Exp. Sta. Bull., No. 55, 1902, p. 120), and Colorado Springs,

Colorado, to Vermejo Park, New Mexico (Bailey, Birds of New Mexico, 1928, p. 697); west to Lake Tahoe and Virginia City, Nevada (Ridgway, Birds N. and Mid. Amer., pt. 1, 1901, p. 71); northward to Lakeview and Camp Harney, Oregon (Jewett, Auk, xxvi, 1909, p. 7), and rather generally through Washington and southern British Columbia.

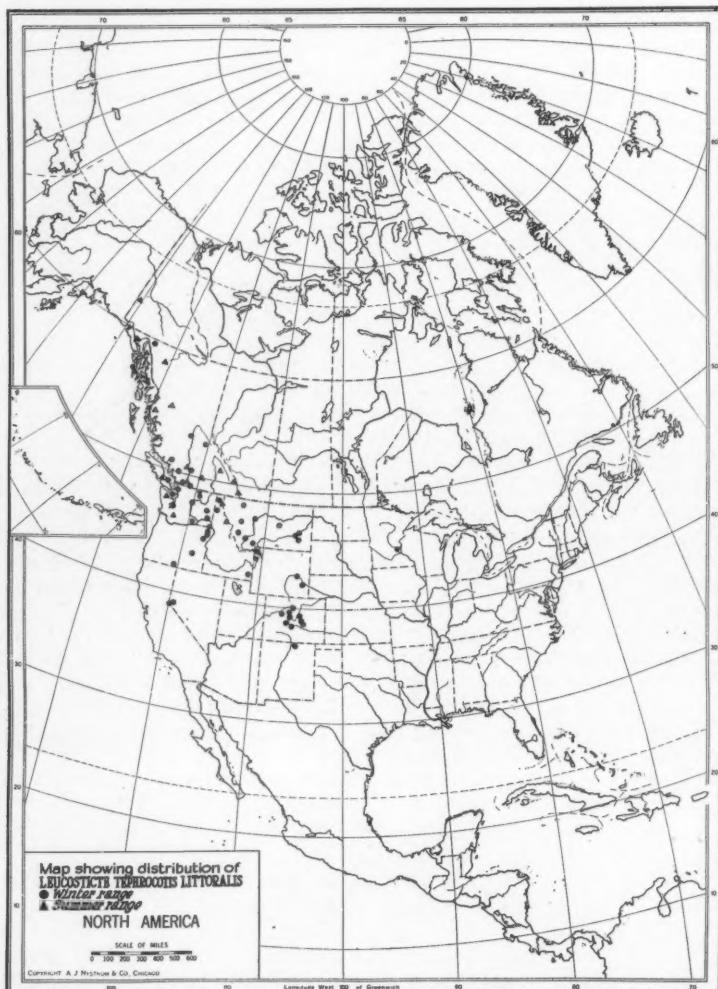


Fig. 31. MAP SHOWING DISTRIBUTION OF THE HEPBURN ROSY FINCH, INDICATING SUMMER AND WINTER STATIONS OF OCCURRENCE.

General habits. The leucostictes are decidedly gregarious; all wait till some venturesome spirit shows the way to food or starts the flight, then others follow quickly. They fly in dense masses in an undulating manner. The individual apparently keeps to no set position in the flock, which constantly whirls about, much like a group of dry leaves carried on a stiff breeze or as caught suddenly by a whirlwind and thus twisted onto another course, or set down as suddenly as it was started in flight. Upon arrival at the rock, the birds swirl in, close to the face of the upper portion, perching abruptly. They often circle several times about the rock; then alighting they dart from jagged point to jagged point, working down, amid much chatter, to the base, stopping at intervals to pick about the lichens, and finally go to the thistle and grass to feed a few moments before roosting.

On several occasions, Prairie Falcons and Pigeon Hawks appeared at the rock. Their presence did not greatly alarm the finches which often ignored the intruder



Fig. 32. SWALLOW ROCK, ON THE SNAKE RIVER NEAR CLARKSTON, WASHINGTON. THE GREATER NUMBER OF OLD CLIFF SWALLOWS' NESTS, WHERE THE ROSY FINCHES ROOSTED, IS AT THE POINT MARKED X, AT THE RIGHT-HAND BOTTOM OF THE PICTURE.

entirely or gave chase in flocks of fifteen or twenty individuals. Never did they seem very enthusiastic about mobbing the enemy.

Rosy Finches are perpetually in action, never perching longer than a few seconds at a time. It was of interest to note that, while feeding upon Russian thistle and Jim Hill mustard, which protruded through several inches of snow, they walked with a staggering motion rather than hopping as is characteristic of most sparrows. After feeding here for a few moments they swirled off to a ledge of rimrock to perch and chatter and then came back to the food again.

The birds begin preparation for the night long before sunset, the flock usually appearing at the roosting site between two and three o'clock. A bird enters a swallow's nest and usually turns at once, and thrusts its head from the opening, uttering a loud cry as though challenging all others. It may remain here a few seconds or it may come out at once and repeat the same performance in another nest. Often a single bird will inspect as many as a dozen nests before finally settling in one. Usually by four o'clock the entire flock is at roost and no sound can be heard, nor can the birds be frightened from the nests.

Song and calls. The song and call notes of the Rosy Finches have been variously described. According to the several records, the notes of all members of the genus are similar. In their monumental work, Dawson and Bowles (Birds of Washington, I, 1909, p. 76) state that a sole note does duty for every mood and describe it as the sound of the "slap of the ratlines on a flagpole in a high wind." Sillaway (*loc. cit.*) has stated that the alarm note is *quir* or *quie-quie*, early in the season, but after the middle of January the male was noted to perch and utter a note like *tree-ree-ree-ree-ree*, and still a bit later they utter "wheezy-chants". Trippe (see Coues, 1874) in a summer record states "the only note I have heard it utter is a kind of 'churr' like the call of the Scarlet Tanager"; and in a letter, Bendire (Bull. Nuttall Ornith. Club, III, 1878, p. 189) wrote of the Hepburn Leucosticte that "its song was quite varied, low and sweet, but feeble and without much volume. It was still quite a fair and very pleasant song."

In our notes the call has been repeatedly mentioned and interpreted. While the birds are in flight there is constant chattering, and on a dull day, when they are flying at a distance their presence can be detected first by the thin, clear notes uttered in rapid succession. The flock note is similar to that of the Evening Grosbeak though not so forceful and we have interpreted it variously as *terrip* or *terrp*; also as a half whisper as *peep*, *peep* and *cheep*, *cheep*. The alarm note is a short, guttural, monosyllabic *cheep*, *peep*, *peep*. At other times it is very curt, being *cha cha*.

Few attempts at song were noted until the first of February and then the first song was somewhat sketchy. A notation for February 4, 1928, states that the birds were trying to sing, for some were giving softly a few connected notes. Most dominant at this time was a soft *cheek-ah*, a soft song like that of the Purple Finch. Again on February 12, one Hepburn sat on a tree and sang a buzzy Purple Finch song. This may be the song of the birds. After this date attempts at song are common, and on February 25 a note states definitely that the males were singing. The song, a long warble, was much like that of the Goldfinch.

The morning call proved interesting as it was somewhat different from the usual flock note. The instant a bird appeared at the opening of the nest it gave a loud, clear *peep* followed by a lower softer *churr*, *churr*. Except for the fact that the notes are more intense, there is, contrary to expectation, no general clamor among the birds at this time, for, after a moment or two of preening and stretching, they fly off singly or in groups of two's or three's in search of food. They leave the nests shortly after dawn and long before sunrise. Even on dark cloudy mornings in the latter part of November they were about a little after 6:30 a. m.

Breeding habits. Very little is known of the breeding habits of the Hepburn Leucosticte due, perhaps in a large measure, to its natural preference for localities of high elevation and of precipitous nature. The approach of sexual maturity is indicated by several factors chief among which are the changing color of the bill and plumage, the development of song, and the increasing quarrelsomeness among

the males. The changing coloration of the bill is probably the best index of the beginning of the breeding season. In birds of late autumn and early winter the bill is yellowish with dusky tip. In some in early January the bill was almost entirely yellow. However, even as early as February 1, the bills of a few were turning darker. A bird taken March 3 showed "a darker bill than the majority



Fig. 33. GRAY-CROWNED ROSY FINCH (*Leucosticte tephrocotis tephrocotis*).



Fig. 34. HEPBURN ROSY FINCH (*Leucosticte tephrocotis littoralis*).

thus far," while a week later, just before migration, we noted that "the bills were much darker than earlier," being almost as dark as specimens taken at the height of the breeding season.

The first attempts at song are, as described elsewhere, merely a few disconnected notes; but as the spring advances, the males sing a well connected, sustained song.

With the exception of active competition for roosting places, there is little quarreling among the birds early in the winter. After the latter part of January, however, the birds become more quarrelsome. This continues with increasing vigor until shortly before the departure of the flock, when the birds seem to be paired. On March 3, 1928, we observed that at the spring there was constant fighting which consisted largely of the aggressor opening his bill as though to intimidate, and making a hissing noise. He then rushed toward the opponent, caught at its bill and the two fell, fluttering and whirling, to the ground in a circular motion.

Toward the end of the winter, shortly before the migration begins, the flock breaks up somewhat. It is probable that the birds mate about this time, before migration to the nesting locality begins. On March 10, 1928, it was evident that the birds had paired. This date, incidentally, was the latest record for the birds for that season.

Banded birds. In an effort to determine, if possible, whether the birds returned year after year to the same winter locality we established a feeding and banding station at the base of Swallow Rock. Fortunately for our purposes the Rosy Finches came well to our food, which consisted largely of cracked wheat and corn. They clustered in large numbers about the food much as do English Sparrows, though they made few sounds while feeding, except for an occasional chirp.

The banding trap was fourteen by sixteen inches, constructed as a shallow box some six inches deep. The top was of coarse cotton net which cut off very little light and allowed the birds to go under without much concern. The first banding was done on February 4, 1928, when the birds came to the rock at two p. m., feeding on the upper slopes, then working down to the food at the base in the characteristic manner. At 2:55 the first Hepburn, apparently a female, was banded. Only one other Hepburn and one Gray-crown were banded that day. On February 8 two more *litoralis* were banded. We observed a banded Gray-crown and felt that it was in all probability the one we had liberated a few days previously. Seventeen more *litoralis* and one *tephrocotis* were banded on February 11, making our total of Hepburns twenty-two. Two of these were later collected, one by mistake, on March 1, 1928, the other, November 10, 1929. This last proved of much interest as it showed that at least one of the previous year's birds had returned. No other banded birds were observed, however, either in this or the following year.

Food habits. The food habits of the birds were studied with as much detail as possible, the crops and gizzards of all the birds collected being preserved for this purpose. It was found that 99 per cent of the food consists of the seeds of weeds found abundantly on the steep slopes of the cañon walls or in the wheat fields on the tops of the bluffs, while but one per cent was insect material. The seeds most commonly taken are Russian thistle, *Salsola kali*; wild grass, *Sporobolus cryptandrus*; Jim Hill mustard, *Sisymbrium altissimum*; and sunflower, *Helianthus annuus*. (See accompanying table.)

The feeding activities vary with the time of day, though it is evident that the birds feed almost constantly, ranging over wide areas. On several occasions large flocks of finches were seen feeding on the slopes of the opposite side of the Snake River Cañon, several miles away from the roosting site. They start feeding almost immediately after leaving the nests in the morning and do not return to

the rock until after mid-day. Once the birds circled over at twelve o'clock but did not alight. A bit later they lit and fed on the cliff west of the rock and came to the food at the feeding station. We observed that they obtained water from the seep basin at the base of the rock. Some suspended themselves momentarily by rapid fluttering of the wings while they caught the water as it dripped from the overhanging rocks, while others lit and drank from the small pool.

Swarth (Univ. Calif. Publ. Zool., 24, 1922, p. 235) took twenty-two specimens of *Leucosticte tephrocotis littoralis* on July 23, at Doch-da-on Creek in the Stikine River region of British Columbia. The gullets and stomachs were preserved, of sixteen of these birds, all that contained any food. From these it is evident that insects form a large part of the diet of both old and young during the summer months. Their averages (determined by the United States Biological Survey) were, as might be expected, in decided contrast to our winter averages. Insect material was found to be 59 percent and vegetable matter 41 percent of the total.

For the four months from November to March, inclusive, the food may be summarized as follows:

Month	Number of stomachs	Animal matter	Vegetable matter
November	5	1.80 %	98.20 %
December	3	1.17	98.83
January	7	.43	99.57
February	11	.41	99.59
March	5	2.20	97.80

Record of stomachs showing the occurrence of seeds most commonly used as food by *Leucosticte tephrocotis littoralis*, all taken near Clarkston, Washington:

Common name	Scientific name	Times occurred	Number of seeds
Russian thistle	<i>Salsola kali</i>	21	2220
Wild grass	<i>Sporobolus cryptandrus</i>	20	4307
Jim Hill mustard	<i>Sisymbrium altissimum</i>	22	5584
Tumbleweed	<i>Amaranthus graecizans</i>	15	492
Sunflower	<i>Helianthus annuus</i>	6	338
Filaree	<i>Erodium cicutarium</i>	7	91
Spring Beauty	<i>Claytonia linearis</i>	3	35
Buckwheat	<i>Eriogonum</i> sp.	2	29
Willow herb	<i>Epilobium paniculatum</i>	3	37
Spurge	<i>Euphorbia serphyllifolia</i>	2	7
Total		110	13,167

Acknowledgment. Many of the facts used in compiling the statements of distribution of the Hepburn Rosy Finch have been obtained from lists of specimens in the collections of the various museums of the United States and Canada, and from the United States Biological Survey. To the directors of these institutions and to all others who have so kindly supplied data we wish to express our sincere appreciation. Thanks are due especially to Dr. J. Grinnell of the Museum of Vertebrate Zoology, for the loan of that museum's complete collection of *Leucosticte* skins, and to Dr. Herbert Friedmann of the United States National Museum, for the loan of the type specimen of *L. t. littoralis*, and for a careful reading of the manuscript.

Pullman, Washington, April 4, 1931.

EGG-LAYING RECORD OF A CAPTIVE MOURNING DOVE

By MARGARET MORSE NICE

On September 12, 1925, in Norman, Oklahoma, we took two well-grown Western Mourning Doves (*Zenaidura macroura marginella*) about 12 to 14 days old from their nests. By the 15th they had learned to feed themselves on a mixture of bread, milk, seeds and gravel; later they were given canary bird seeds, kaffir corn and chick feed. They were kept by themselves in an outdoor cage 4 by 6 by 10 feet in size, 10 feet from our sleeping porch. Wild Mourning Doves first appeared on our grounds in 1926, on March 19, and were heard and seen occasionally thereafter.

The begging note was not heard from these young birds, but for the first ten days a high-pitched musical *whee-up* was used. From September 21 for two months the doves uttered a low-pitched *putt*. The alarm note *oo* appeared October 11; it was occasionally heard throughout the winter and also on May 20, when a cat passed by.

Until March 18 the birds showed no evidence of sex activity, but on this date one of them, L, gave a faulty *coo* and was seen charging the other, R; it was not until April 13 that his *coo* or perch song (see Craig, 1911) became entirely normal. Five days later he grew restless, evidently trying to indulge in nuptial flights, a frustrated activity he continued until released, but one never exhibited by R. Late in the afternoon of April 3, a box was placed near the front of their cage, 3 feet from the floor. At 7 o'clock the next morning L was in the box giving the nest call, *coo-roo*, in the correct attitude with head down, tail up and wings flipping. R soon settled herself in the box and gave a similar note. L searched for nesting material, picked up twigs and dropped them again. It was not until 9:30 that he brought one to the box. At 10:25 he got a piece of grass and stepped on his mate facing her tail instead of her head; the grass was dropped to the floor. The next piece he put on her back. R then descended, got a bunch of dead grass and placed it in the corner of the box; L manipulated it, took it to the floor and left it there. By April 6 they had learned the nest building routine, the female staying in the nest, the male bringing material, stepping on his mate's back and laying the piece before her for her to arrange. The next day, however, he carried materials away as well as bringing them up. After six mornings devoted to nest building the results were meager indeed.

April 10 at 5:45 p. m., R laid her first egg, standing erect during the process. She incubated it to some extent, but L did not. The second egg was laid during the morning of April 12. The next morning not a scrap of material was in the box. L's impulse to incubate did not function at all and his nest building behavior, after being perfected, degenerated. The result was a succession of eggs from R at a rapid rate, since L insisted on continually beginning the cycle over and over again. Not only did he fail to incubate, but he refused to allow R to do so, pulling out her feathers until she gave up the attempt. We moved the box to a higher, more secluded place, but it made no difference. The male's sole interest lay in nest calling (on April 13 he gave 70 nest calls in 12 minutes), a little carrying up and down of materials, and copulation.

The first attempt at copulation was seen April 4; L mounted with no preliminary ceremonies, but slipped off. April 5 there was some caressing, a little preening inside the wing, but no billing; after mating, the male gave the copulation note with bill wide open, *hoo hoo hoo hoo*. April 7 the process was the same except that now they included billing among the preliminaries. On April 13 the female

as well as the male gave the copulation note and thus the ceremony was complete; yet it was always gone through in abbreviated form in comparison with what I have observed in wild Mourning Doves.

In the fall of 1919 we raised two male Mourning Doves in captivity (Nice, 1921); the following spring no wild doves were heard on our grounds. The older of these birds gave an imperfect *coo* on February 7, and it was not until the 18th that he uttered the complete song; the younger cooed properly from his first trial, March 19. Thus the *coo* was faulty for some time in the two young males that had not heard it from other doves. Twice I have heard wild doves with slightly abnormal songs.

Craig (1914, p. 131) found with male Ring Doves reared in isolation that "the various notes uttered by this species, and all accompanying expressive movements, developed in perfect form." It would appear that the song of this dove is a simpler affair than that of the Mourning Dove. No mention is made of nest building, but all three birds when brought into contact with females experienced considerable difficulty in learning the copulation procedure.

Of the behavior patterns connected with reproduction the following functioned from the first in our pair of young birds: nest calling and its attendant attitudes in both birds; probably nest building in the female; charging the female, and the impulse to nuptial flight in the male. Other patterns were uncertain at first, but were performed passably well after considerable practise: the copulation ceremony with both birds; brooding in the female; the perch song, and nest building in the male (his part being more complicated than that of the female).

In 69 days R laid 9 sets totalling 15 eggs. The dates of laying were: April 10, 12; 18, 20; 26, 28; May 5, 7; 13, 15; 25; June 1; 9, 11; 18. The sixth, seventh and ninth sets consisted of single eggs. The numbers of days between complete sets were 8, 8, 9, 8, 10, 7, 10, 7. On June 21, disgusted with L's idiotic behavior, we set the birds free, hoping that R would find a sane husband.

How many eggs is a Mourning Dove capable of laying? Beam (1925) reports 5 broods being raised in one nest in Ohio from April 7 to September 26, but it is possible that the last two broods were the product of a second pair. Another Ohio pair raised five broods in an old Robin's nest from the middle of March to September 1 (Roads, 1931). Whitman (1919) tells of a captive bird that laid 6 sets from March 8 to August 1, raising 3 broods, and of another that laid 7 sets from March 24 to August 20, only one brood being successful. The prize-taking record is that of a pair of young birds in an aviary in California (Woodward, 1929); 13 sets totalling 26 eggs were laid from January 25 to August 30, 4 young of 3 broods being raised. It is unfortunate that we did not realize at the time, the importance of the experiment being staged by our pair where a female was kept laying at full capacity, as it would have been of much interest to have learned the limits of her fecundity.

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Columbus, Ohio, April 20, 1931.

AN ORANGELESS MUTANT OF THE VARIED THRUSH AND ITS BEARING ON SEX COLOR-DIFFERENCES

By J. EUGENE LAW¹

Preview.—From a study of a partially albino female Varied Thrush, certain inferences are suggested with regard to sex coloration, principal of which is that, in *Ixoreus*, the sex difference in pigmentation is quantitative rather than qualitative. Other inferences involved suggest:

1. A reciprocal or alternative relation between melanin and lipochrome pigments.
2. The controls which influence their deposition independently may affect one pigment or the other.
3. The lipochrome, because it acts as a stain, probably remains in suspension until the collapse of the cortex-forming cells.
4. The elements which form pigments must have been selectively stored in these cells while they were living cells.
5. A catalytic factor localized within the follicle, and stimulated to activity whenever a feather is lost, must direct the deposition of pigments according to the pattern of its kind.
6. The elements out of which pigments are formed must be present at all times in the blood stream.
7. Quantitative color readjustments may be stimulated by courting antics.

Text.—On March 25, 1921, there was brought into the Museum of Vertebrate Zoology, at Berkeley, California, an off-color bird of the species *Ixoreus naevius* which had been found alive in a nearby cañon with its wing freshly broken. It is now a specimen (no. 41851, Mus. Vert. Zool.) and was sexed as a female.

In definition, location, and contours of plumage pattern, this specimen agrees in every particular with normal females of the species, but there is a near total absence of the orange coloration, *in lieu* of which white or near white prevails. Only on the basal spots of the outer webs of the secondaries does the white bear more than the faintest trace of orange or buff, and even there it is little more than a wash.

The crown of this mutant, and in less measure the nape and cervix, are brown somewhat diluted in contra-measure by slate gray, which is the color of the saddle and rump. Thus, the dorsal areas, though they have a little brown tone anteriorly, lack the warm brown tone of normal females and more nearly resemble those of males.

In no respect do the gray or dusky areas seem subnormal in intensity nor has the absence of the orange factor intensified or blackened either the auricular patch or the crescent on the breast. The latter is obscure after the manner of other females.

It seems significant that, in this mutant female, absence of the orange-producing element should produce a dorsal coloration approaching that of a normal male. Can it be, in this species, that the sex differences in coloration are due, in part at least, to quantitative readjustments of the color pigments? Such an hypothesis is supported by the fact that the lipochrome pigments which are diffused, though in somewhat varying intensities, throughout the cortex of the pennaceous portions of the feathers of both the breast and the dorsal areas of the normal female, appear to be entirely absent from the back and rump of the male and, as compensation, seem to be more intense on the breast. Restated: compared with a normal female, a normal male

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appears to have more in quantity of the orange element ventrally, since there the color is more intense than in the female, and less of the orange element dorsally where its absence yields the slate grays.

Given a definite quantity of the orange or lipochrome element per individual of this species, whether male or female, a more equalized, less specialized distribution would tend to produce a browner back (orange over black) and a paler breast (the female plumage), while quantitative differentiation in distribution of the orange element favoring the breast and depriving the back, would tend to purify their colors to orange and slate respectively, in the areas where these colors normally dominate (the male plumage).

In distribution of melanin pigment, a somewhat different scheme characterizes the sex differences in normal adults. For, while the breast-collar is more intensely supplied with black or melanin pigment in the male than in the female (and this to the exclusion of the orange or lipochrome pigment abundant in the breast-collar of the female), this excess of black pigment is not at the expense of the dorsal areas. Though by less margin than in the breast-collar, the dorsal areas of the male are better supplied with melanin pigment than are the dorsal areas of the female. Perhaps, to a similar extent that the aggregate of melanin pigment is greater in the male, the aggregate of lipochrome pigment is less, for the added intensity of the latter in the breast of the male, which is not great, may fall short in quantity of an amount which would equal that normally present on the dorsum and rump of the female.

Increased intensity of melanin beyond a certain point, which does not appear to be the saturation point, seems rather suddenly to step the quality over from a feather (the back of a normal female), which combines lipochrome and melanin pigments (in no sense fused together), to a feather (the back of a normal male) in which the lipochrome is absent, at least so far as any tint of it is revealed by a microscope, either with dry mounts or in clearing media. As to saturation point, these gray feathers of the back of the male are less intensively pigmented with melanin than are the black feathers of the breast-collar.

The restrictive allocations of the lipochromes in the male, accompanied by an increase of intensity of the melanins in the areas in which the lipochromes have failed to appear, prompt the surmise that there may be a complementary or reciprocal or alternative relation between the two types of pigment which is physiological; possibly a repellent or prohibitive quality between them as a result of which the lipochromes disappear or, rather, fail to appear when the melanins exceed or are to exceed a certain intensity.

Since the melanin and lipochrome pigments are said to differ in chemical composition and to invade different portions of the feather structure, it is perhaps not surprising that the melanins should be normal in an individual whose lipochromes had failed to develop. Whatever the controls which influence the deposition of melanins and lipochromes, such controls were obviously separate and distinct in this mutant. Being separate, they can be subject to different physiological stimuli or react differently to the same physiological stimulus.

The lipochromes which color certain portions of the plumage in *Ixoreus* are diffused in the cortex without apparent granulation. It would seem that the elements out of which lipochrome pigments are metabolized may have remained in fluid suspension after the cells of the feather bud were formed. When this cell-structure collapses to form the fused cortex of the feather, the lipochrome appears to act as a stain. It is perhaps a further logical inference that when the chemical readjust-

ment which induces the collapse of the cell structure occurs, the elements to produce the lipochrome stain have been already selectively stored in such collapsing cells. But the lipochrome stain need not be the chemical or mechanical result of the collapse of the cells, since lipochrome pigment is absent in similarly fused cortices of other feathers of the same bird.

Since the blood stream must be the agency of distribution of the elements necessary for pigment production, and since the blood itself, as far as we know, is without power selectively to distribute these elements, their lodgement must involve local stimuli or controls in the feather follicle itself which withdraw these elements from the blood and lodge them in certain cells of the growing feather.

Since, again, the pattern and color of any feather on the bird will be immediately duplicated at any time of the year that a feather is lost, it appears that all the materials out of which any color pigment is to be selected or synthesized in the feather follicle are at all times present in the blood stream.

Probably various factors enter into these follicular controls, for we may have in different species a single color maintained throughout the entire plumage of the bird, or limited to a single pteryla or feather tract, or to a portion of a feather tract, or to a single feather, a single web of a feather, or a mere spot on a feather. We may even find rhachis, barb, barbule, and barbicel, each with its different style of coloration consistently maintained throughout a single feather.

The function of such control factors appears to be that of a catalytic agent, active only under the stimulus of normal molt or of molt induced by the adventitious loss of feathers.

Because the control factor or catalytic agent is an integral part of each feather follicle and directly reflects activity within the follicle, it may be presumed to share modifications imposed upon the follicle by physiological influences from without. For instance, follicles which overlie muscles much used in the bird's activities, and hence abundantly supplied with blood vessels, might reflect such advantage by producing stronger colors through more efficient catalyzation.

Hit and miss as such inferences seem to be at the present stage of our studies, there is perhaps a hint of probability in them. For instance, the strutting antics of the courting male, in which it consciously displays certain feather tracts, may have effected by frequent repetition through countless generations, a physiological superiority in the feather follicles of the tracts so displayed, to the end that these more vigorous follicles yield the brighter colors.

Applied to the species under discussion, we find that in the male the orange pigments, which, incidentally, are the more fluid in chemical composition, concentrated on the breast and withdrawn from the back, while in the female the orange pigment is more generally distributed over the body. It is the breast, I dare say, that is displayed in the courting of this bird, though I have never been fortunate enough to observe these activities.

One's mind at once, of course, turns to the multitude of patterns and color combinations which the bird world presents, and to the unfeasibility of applying any general rule for color development to them all. Obviously, no such application is possible at present. But in any consideration of the theme herein stressed one must bear in mind that color in the various groups and in the various divisions of any group is not in the same stage of development. Nor has each group the same basic color trends out of which it is developing its color patterns, nor the same basic patterns on which to hang its colors.

Altadena, California, April 8, 1930.

NOTES ON BIRDS OBSERVED ALONG THE WEST COAST OF HUDSON BAY

By GEORGE MIKSCH SUTTON¹

On August 16, 1930, I left Southampton Island, Hudson Bay, on the Hudson's Bay Company steamer *Nascopie*, to begin a tedious return to the United States after a year in the Arctic. The *Nascopie*, in continuing her annual mid-summer itinerary, went from Southampton to Chesterfield Inlet, reaching this point on August 18. Here I learned there was a possibility of my getting passage on a smaller boat or on an airplane down the coast as far as the new railroad terminus at Churchill. By so doing I could, I foresaw, get out to civilization much more promptly than by remaining aboard the *Nascopie*. I decided to take the chance, so left the steamer after making certain that my shipment of specimens would be cared for properly. I took no collecting equipment with me since all my effects were packed in ponderous crates in the hold of the vessel; and furthermore I knew that I should be prepared to "travel light" were I to go south in an airplane. I took with me scarcely even enough field clothes; but I knew I would be able to make satisfactory identifications with my six-power binocular, and kind friends at the Hudson's Bay Company Post and at the Northwest Mounted Police Barracks offered me their shot guns should I need them.

I remained at Chesterfield Inlet until August 29. During this ten-day period we had much fog, wind and rain, and very little sunshine. It was not pleasant to be in the field; but I succeeded in getting out, at least for a brief walk, every day. In my work here I was courteously assisted by Messrs. James Spence and R. Welby Stewart, both of the Hudson's Bay Company, and by Mr. Turney of Revillon Frères.

The region about Chesterfield was typical Barren Grounds. Near the coast I found but little willow growth. Between the smooth-topped rock ridges were mossy and grassy valleys. Everywhere were small lakes. At this season the taller varieties of grass were fully grown and already turning yellow or brown. Just back from the sandy beaches were stands of coarse grass which grew about waist high. Quantities of edible berries were to be found everywhere; and the moss was dotted with fleshy fungi of several varieties—red, blue and yellow. The familiar birds, such as the Snow Bunting and Lapland Longspur, were silent and secretive; and many of them were yet in the post-nuptial or post-juvenile molt. Flocks of shorebirds frequented the beaches and mud-flats or the shores of some of the low-lying coastal lakes. There was, near the Post, one small, mud-margined puddle where ducks and shorebirds were often seen; and here I made observations every day. Along the higher, rock-edged lakes few, if any, shorebirds were to be found.

Near the Post a series of large wire enclosures had been constructed. Here many Arctic Foxes, yet in their brown and yellowish summer pelage, were kept captive. Small birds, especially Lapland Longspurs, spent much of their time in these enclosures, apparently feeding, not far from the couchant animals. The foxes did not attempt to catch the birds so far as I could see. The wire fencing was

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quite a menace, however, for I found outside the cages the remains of five birds which had been killed by flying into them: three of these were longspurs; one was a Semipalmented Sandpiper, and one a Snow Bunting.

The most striking form of mammal life at Chesterfield was the *Shik-shik*, or Ground Squirrel, probably *Citellus parryi* (Richardson), which I had heard of again and again from the Eskimos at Southampton who were acquainted with the Repulse Bay region, but which I had never seen. These *Shik-shiks* were abundant near the Post. Among the birds which I had not seen on Southampton were the Lesser Yellow-legs and Pintail Duck; and the Northern Phalarope and Savannah Sparrow, which were very rare at Southampton, were here common. I did not collect many specimens. I made a vain attempt to secure a male Rock Ptarmigan in late summer plumage, and shot a Savannah Sparrow so as to check the subspecific status of this form.

On August 29, I accepted Mr. Hugh Conn's² kind invitation to travel southward with him to Churchill in his neat little motor-yacht *Nowya*. There was scarcely room for the nine passengers, but we all crowded in and had a jolly trip. Our first stop was at Marble Island where, feeling that we had plenty of time, we paused long enough to enter through a narrow, swift channel and examine briefly a remarkably well protected harbor. The entrance to this harbor, while deep and perfectly suited to the needs even of medium-sized boats, appeared at a short distance to be little more than a tiny brooklet utterly unfit for navigation. We made Tavane, or Mistake Bay, by evening, and here Mr. Sam Voisey welcomed us; Mr. Spence and I had time to walk over the grassy barrens to a nearby sandy ridge. We did not see many birds, but we caught a Red-backed Mouse among the willow bushes. I had not seen this species of mouse at Southampton or at Chesterfield.

On August 31, late in the evening, we made Eskimo Point. Here I had no opportunity to do any field work. Near the Post was a large lake on which were a few birds. I scarcely had the opportunity even to look at the country, though in coming into the harbor I noted that the general contour of the ridges was not greatly different from that farther north.

On September 1, after weathering a most disagreeable, all-night gale, we made Nunalla, a desolate, rocky place, where, in a wild wind, three of us rowed to shore through choppy waves whose heavy crests, blown into hissing mist, constantly threatened to swamp us. We were soaking wet on reaching the house. I could not do any field work here, though Mr. Edwards, the local representative of the Hudson's Bay Company, gave me some interesting information on the bird-life. My notes on Nunalla do not, apparently, include any statement as to the distance one must go inland from the coast to encounter trees; I have a hazy recollection, however, of having seen some spruce trees on the distant horizon westward from the little house where we stopped. The bush country probably was not more than fifty or sixty miles inland.

On the following day we reached Fort Churchill where, to my great pleasure, I met a fellow bird-man, Mr. Bert Lloyd, who had been making a collection for the Canadian National Museum. The trees at Churchill thrilled me; and Mr. Lloyd's interest in birds was so keen that I decided to try to help him a little rather than to make any collection of my own. The following list does not pretend to include any Churchill records. The data gathered while there I turned over to Mr. Lloyd.

² Mr. Conn was a General Inspector of the Hudson's Bay Company.

This list includes, therefore, only such species as were actually encountered from August 19 to September 2, or identified from specimens or parts of specimens examined at various points along the coast; it is not at all exhaustive, and is offered only in the belief that any information whatsoever on this comparatively little known region is likely to prove of interest.

Gavia arctica pacifica. Pacific Loon. Recorded several times at Chesterfield where it was regarded as a fairly common summer resident. I did not see it elsewhere, but the Hudson's Bay Company representatives at Tavane, Eskimo Point and Nunalla said they were accustomed to seeing it frequently in summer.

Gavia stellata. Red-throated Loon. A pair seen at Chesterfield on August 25. Said to be a common summer resident all along the coast.

Anas rubripes rubripes. Red-legged Black Duck. Remains of several individuals killed on August 28, at Nunalla, were examined on September 1. The feet of these were bright red.

Dafila acuta tzitzihoa. Pintail. I was considerably surprised to find this species common at Chesterfield. Every day we saw from thirty to one hundred birds on some of the small, low-lying, partially tidal lakes not far from the Post. Here the birds rested or fed, rising with amazing speed and buoyancy whenever they were disturbed, or running about on the shore over the grass. I did not collect a specimen, but on the night of August 24 almost captured one in my hand by stalking it with a powerful flashlight. The birds seemed to be feeding on weeds that grew on the bottoms of the ponds as well as on the grass which lined the shores. I did not see any Pintails on the lakes farther inland; nor did I ever see one alight in any of the bays or inlets. They were noted every day from August 19 to 27, and had been seen for weeks previously according to the men at the Post. All the birds had short tails, and all flew perfectly. A good many feathers were to be seen along the shores of the ponds which they frequented, so I believe the molt was in progress.

At Eskimo Point I examined the wings of a Pintail which had been shot on August 26 by the Rev. D. B. Marsh. The natives called this bird a *Kashluak*, meaning "long-neck". At Nunalla, on September 1, I examined three fresh specimens which had been shot on nearby lakes by Mr. Edwards. Two of these were young males in a handsomely patterned plumage.

Nettion carolinense. Green-winged Teal. Wings and head of a male which had been killed during the spring were examined at Nunalla. Mr. Edwards told me the species had been known to nest in the vicinity.

Clangula hyemalis. Old-squaw. A female and three half-grown young were seen daily at Chesterfield on a small lake near the Post. These birds spent much of their time standing or lying on a grassy bank. They were not at all wild. None of them could fly.

On August 25, I saw two birds, apparently a mated pair, on an upland lake. The male was distinctly in the mating plumage, with black head and neck, but, like the female, could not fly. Both birds swam quietly about, diving easily and rapidly now and then. When they stood up in the water to flap their wings they moved with unusual deliberateness and beat their wings with obvious care, this, I think, to prevent any possible injury to the heavy, partly grown quills; and as they swam about they wiggled their tails a great deal. Old-squaws were noted elsewhere along the coast, but nowhere in great flocks.

Somateria mollissima borealis. Northern Eider. No male Eiders in black and white plumage were seen along the entire coast. Females with small rafts of young were noted in the inlets (not in the lakes) at Chesterfield on August 20, 21 and 25, however; and a few flocks of brown-colored birds (sex uncertain) were seen at a distance near Marble Island. These may have been King Eiders. Since I did not examine any specimens at Chesterfield or elsewhere along the coast I am not at all sure that the form encountered was *borealis*. A. P. Low (The Cruise of the Neptune, 1906, p. 316) states that the American Eider is "common everywhere in Hudson Bay and to the northward wherever small islands are found along the shore suitable for nesting", so *dresseri* may be the characteristic subspecies of the west coast of the Bay. At Southampton Island, however, only *borealis* was found.

Somateria spectabilis. King Eider. I examined a young male at Chesterfield on August 21 and learned that the species nested rather rarely in the vicinity. It was not possible for me to identify with certainty flocks of brown-colored Eiders seen at a distance.

Melanitta deglandi. White-winged Scoter. Near Eskimo Point, on August 31, a flock of large black ducks with much white on the wings flew near our boat as we were making our way across a sandy reef not far from shore. I do not see how these could have been anything but White-winged Scoters.

Mergus serrator. Red-breasted Merganser. One was noted at Eskimo Point, on the lake near the Post buildings, on August 31. I could not learn from the natives the local status of the species. Mr. Edwards told me that "saw-bills" had been known to nest a short way inland from Nunalla.

Aquila chrysaëtos canadensis. Golden Eagle. One was shot a short way inland from Eskimo Point during the fall of 1929. This specimen, roughly skinned, was turned over to the Hudson's Bay Company Post at Churchill, where I examined it. It appeared to me to be a female.

Falco peregrinus anatum. Duck Hawk. A pair, seen at Chesterfield on August 21, was chasing or flying about among a loose flock of Arctic Terns.

Lagopus lagopus lagopus. Willow Ptarmigan. I did not see this species at Chesterfield. One of the men at the Post, however, had found a nest containing fourteen eggs during the summer. The nest was placed among some low shrubs some distance inland from the Post. At Nunalla I examined several young birds which Mr. Edwards had recently killed for food.

Lagopus rupestris rupestris. Rock Ptarmigan. At Chesterfield I saw Rock Ptarmigan several times. On August 21, we came upon a flock of five young birds, one of which was badly crippled in the right foot. These birds called in a subdued voice: *peer, peer*. We killed two females with pebbles. On August 25, we encountered a family of nine birds: a handsome male in full late summer plumage, a rather poorly plumaged female, and seven young which peeped as they ran about among the rocks gathering buds and berries. We killed the adult female and one of the young (a female) with stones; but the adult male was too wary for us. On the following day I went after him with a gun but could not find him. I did run across a fine flock of fourteen young birds, however, one of which, a male, I collected. All these birds had short and irregularly developed tails. Men at the Post told me that nests of the Rock Ptarmigan found thereabouts usually contained eleven eggs.

Grus americana. Whooping Crane. At Eskimo Point there was described to me a "large white bird with long legs and black on the ends of the wings" which had been killed about seventy miles inland during the summer by an Eskimo named Koonook. The wings and feet had, I believe, been saved, but I did not have opportunity to examine them, nor to talk with the man who had killed the bird. The natives had called the bird *Tuteeguk*, which is precisely the name given to the Little Brown Crane of Southampton Island by the Eskimos there; but all spoke of this bird as being much larger than the gray *Tuteeguk* with which they had all their lives been familiar, and from their remarks I knew they regarded the white *Tuteeguk* as exceedingly rare.

Grus canadensis canadensis. Little Brown Crane. Mr. Edwards saw two cranes, which may have been of this species, at Nunalla on August 31. We did not see any along the entire coast though we frequently heard reports of them.

Charadrius semipalmatus. Semipalmated Plover. Noted daily from August 19 to 27, at Chesterfield. Some of the young birds seen on the 19th were barely able to fly.

Pluvialis dominica dominica. Golden Plover. Noted at Chesterfield on August 20 and 27, two birds on the former date, and a family group of six on the latter.

Arenaria interpres morinella. Ruddy Turnstone. Noted daily at Chesterfield from August 19 to 25. Some of the young birds in fresh winter plumage were very tame. Few adults were seen.

Capella delicata. Wilson Snipe. At Eskimo Point on August 31, I saw and heard distinctly a Wilson Snipe as it flew up in front of two natives who were returning to the Post with water from a nearby lake.

Phaeopus hudsonicus. Hudsonian Curlew. Three were seen flying over the Post at Chesterfield on August 27, and five were noted at Nunalla on September 1.

Totanus flavipes. Lesser Yellow-legs. One was observed off and on for an hour at Chesterfield on August 19. It was very tame—so tame in fact that I once hit its tail with a pebble tossed in fun, without even frightening it into flight; and I was able to note the color pattern, yellow feet and size with perfect satisfaction. I was much surprised to find this species here in view of its absence at Southampton Island. At Nunalla, Mr. Edwards told me that these "Nan Serries" were often common thereabouts in migration. I do not know, of course, whether the birds he referred to were Lesser or Greater Yellow-legs; but they must have been one species or the other, judging from his comments as to the color of the feet.

Pisobia fuscicollis. White-rumped Sandpiper. Many were noted daily about Chesterfield, along the sandy beaches and the muddy margins of the coastal lakes. On August 21, I was amused at noting White-rumped and Semipalmated sandpipers and Semipalmated Plover hopping about on one foot. At first I thought the birds were deformed; later, however, I decided they were trying to keep one foot warm or dry, or simply did not care to exert the effort required in putting down or lifting up a foot which had been drawn into the belly plumage. I noted this at noon, during a period when many of the shorebirds were evidently resting. It was interesting indeed to watch a little flock of eight or ten birds of three different species thus hobbling along with heads drawn in and eyes half closed as if in some sort of noon-day somnambulism.

Pisobia bairdi. Baird Sandpiper. On August 20, I satisfactorily identified about ten individuals among the flocks of shorebirds which fed along the beach not far from the Post at Chesterfield. Most of these were single birds which stood here and there apart from the other waders. I noted especially the dark feet and the scaly appearance of the back. The tips of the folded wings, as in the White-rumped Sandpiper, extended noticeably beyond the end of the tail.

Pelidna alpina sakhalina. Red-backed Sandpiper. Very common at Chesterfield on August 19 and 20; less commonly noted thereafter, and not seen at other points along the coast.

Ereunetes pusillus. Semipalmated Sandpiper. Abundant at Chesterfield from August 19 to 27. Not noted elsewhere along the coast north of Churchill.

Crocethia alba. Sanderling. Several noted every day at Chesterfield from August 19 to 27. About one-third of the birds seemed to be adults in changing plumage, with rusty blotching on the head.

Phalaropus fulicarius. Red Phalarope. A few were seen at Chesterfield from August 19 to 21. Three immature birds were noted several times along a rocky beach where, in the shallow, sea-weed filled pools, they searched diligently for food. They were more deliberate in their movements than the Northern Phalaropes, did not twirl about as much, were less suspicious, and were not noted at all in the inland pools where the Northern Phalaropes characteristically gathered. The call-notes of the two species were strikingly different, that of the Red being a hoarse *phee-eep*, those of the Northern rather abrupt *titk* and a peculiar sucking disyllable.

Lobipes lobatus. Northern Phalarope. Many were seen on a small mud-margined lake near the Post at Chesterfield on August 20 and 21. At one time I counted twenty-seven individuals on this lake; they were exceedingly restless, flying about erratically, plopping into the water abruptly, twirling about with heads directed downward toward the food they were seeking, but ready to be up and off at any hint of danger. This species was much commoner at Chesterfield than the Red Phalarope.

Stercorarius parasiticus. Parasitic Jaeger. Recorded several times at Chesterfield but not elsewhere along the coast. Dr. L. D. Livingstone secured a male not far from the Post on August 25. It was very fat. The stomach contained the remains of a White-rumped and a Semipalmated Sandpiper. It is noteworthy that no other species of Jaeger was seen at Chesterfield, and that Jaegers in general should apparently be so rare along the coast.

Larus kumlieni. Kumlien Gull. A handsome adult was noted several times and observed at close range on August 29, near Marble Island. This bird, a solitary individual, was tamer than the Herring Gulls which flew about the boat. It

appeared to be a little smaller than a Herring Gull, and was, of course, quite different in general appearance. It flew about the *Nowya* several times, settling on the water nearby to eat the food which we threw to it and extending its wings in such a way as to permit me to scrutinize the gray tips.

Larus argentatus smithsonianus. Herring Gull. Noted all along the coast. A large nesting colony was reported near Chesterfield. At Nunalla I caught a fully fledged young bird which had been crippled in some way, and which had come to feed upon the fish caught in the natives' nets which had been exposed at low tide. The wind was so strong that this unfortunate bird could scarcely stand upright. When it tried to run away it was blown over and over through the mud and water.

Sterna paradisaea. Arctic Tern. Abundant at Chesterfield from August 19 to 27. Not seen anywhere thereafter until we reached Churchill, where a single tern, probably though not certainly of this species, was noted early in September, flying over one of the larger lakes. On the night of August 19, and again on the night of the 21st, I heard terns calling loudly in the harbor. I do not know whether the presence of the ship or the noise of the unloading of cargo disturbed them, or whether they were restless on the eve of their autumnal departure. On August 20, I watched young birds, some of them laughably tame, begging for food as they flew near or after their parents. On the same date a great band of adults was observed fishing in the shallow water not far from shore. Most of these birds seemed to disappear under water at each dive. They rarely came up without a fish. These fish they swallowed in mid-air, sometimes dropping and grasping them again in such a way as to be able to swallow them more easily.

Otocoris alpestris hoyti. Hoyt Horned Lark. Horned Larks, presumably of this subspecies, were noted daily at Chesterfield. Most of the birds appeared to be in their new winter plumage. One which stayed about the Post, however, was yet in full juvenal plumage, with heavily spotted head and back. The species was noted also at Tavane on August 30.

Anthus spinoletta rubescens. American Pipit. Noted at Chesterfield on August 23, 24 and 25 (two seen on the last date); at Tavane on August 30; and at Eskimo Point on August 31, where it was the most noticeable species about the Post.

Passerculus sandwichensis subsp. Savannah Sparrow. I was much surprised to find this species fairly common at Chesterfield where, among the rank grass and on the piles of wet sea-weed along the beach, it was seen frequently. It was especially common in the grass about the fox cages. The flight, general appearance and fine call notes of this species attracted my attention to it at once. An immature male was collected on August 27. This specimen was so badly mutilated that I consider it best, for the time being, not to attempt to place it subspecifically. Mr. Taverner, in a letter to me dated January 7, 1931, expresses the opinion that the birds of this region belong to the race *labradorius* of Howe. Mr. Taverner's exact words are: "From a casual inspection I should judge that these northern birds are the heavily colored ones we have noted often passing through southern Ontario, and so forth, in migration. I have noted these a good many times and am inclined to refer them to Howe's *labradorius* which I suspect is a good race and extends right across the north."

Calcarius lapponicus lapponicus. Lapland Longspur. Noted everywhere along the coast; one of the commonest and most widely distributed birds of the region. At Chesterfield many frequented the wire enclosures where the captive foxes were kept.

Plectrophenax nivalis nivalis. Snow Bunting. Noted daily at Chesterfield from August 19 to 27. Most of the birds were juveniles changing into their first winter plumage. Recorded also at Tavane on August 30, but not seen farther to the south along the coast.

Cornell University, Ithaca, New York, February 5, 1931.

THE TYRANNY OF THE TRINOMIAL

By HARRY S. SWARTH*

It has been impressed upon me of late years that we are beginning to need delivery from the slavery of enforced trinomial nomenclature. It is so short a time since the need was the other way, the struggling trinomial requiring all possible support from its adherents, that it seems like heresy for any modern worker in systematics to raise his voice against the system. Here, as in so many other things, it is the letter of the law that kills. The system is good, it is useful, it expresses great truths, and it is used to excellent advantage to illustrate important facts—but it can also be used, and has been, so that the facts are obscured or entirely hidden.

I am not alone in this conviction. Some years ago Dr. Witmer Stone in a review in the *Auk* suggested the desirability of an arbitrary breaking-up of certain long series of subspecies, but his suggestion has so far met with no recognition or response. His idea seems to me to be reasonable, and such action need not be considered as entirely arbitrary either. W. E. Clyde Todd, in a study of certain South American flycatchers, sounded just the same warning that I am now repeating, against hasty subspecific union of different forms on the basis of external similarities in the prepared specimens. Mr. Ridgway, too, published in the *Auk* (1923) "a plea for caution in the use of trinomials."

Harmful aspects of exaggerated trinomialism are seen in two developments in the systematic treatment of variation: First, in the increasing length of certain series of subspecies, second, in the linking together of Old World and New World series of variable forms into one specific unit. Neither development is necessarily objectionable in itself, and in neither case could strong protest be raised if there were absolute proof forthcoming of the existence of the conditions necessary to subspecific treatment; but such proof is rarely presented. Generally there is a basis of assumption.

My objections to the increasing length of the series of subspecies that I have in mind should not be interpreted as opposition to the naming of additional forms, which is not the point I am making. An example of what I do mean is found in the series of named forms of the Winter Wren and its allies, the genus *Nannus*. The currently accepted treatment of this group labels the several North American forms and the several Aleutian forms all as subspecies of one species, which is, furthermore, conspecific with the several Old World forms. Intergradation of a sort does exist, of course, but even so I contend that trinomial usage applied throughout this series obscures more than it enlightens.

The North American mainland wrens, *hiemalis* and *pacificus*, with the Kodiak Island *helleri*, are closely similar and meet the standards that I would apply in using the trinomial. In the group of subspecies upon the Aleutian and Pribilof islands there is an abrupt difference; gradual change of characters in a given direction, from the mainland westward, has not been demonstrated. *Helleri* is not an important link between the mainland and the Bering Sea groups. Even though variability in one character or another can be picked out here, there and elsewhere throughout the islands, and can be interpreted as a demonstration of variation from one extreme to another, I submit that this is not a standard to which we should adhere. We lose sight thereby of a sudden change in character in this group, and we lose

*Read at the Sixth Annual Meeting of the Cooper Ornithological Club, Berkeley, May 16, 1931.

sight of the fact that variation in this group in the Bering Sea region can be correlated with what is seen there in other bird assemblages. The preferable alternative in this case is, I think, to regard the North American, the Bering Sea, and the Old World group, each as a separate species.

Examples of a slightly different sort may be found in the long series of western American jays of the genus *Aphelocoma*, and brown towhees of the genus *Pipilo*, where in each case rather tortuous application of the intergradation concept has resulted in the linking together of aggregations of geographical variants that to my mind had better be kept in separate assemblages.

Some of our ablest exponents of systematic ornithology have assured us that there is no essential difference between a species and a subspecies. We enthusiastically subscribe to the sentiment without realizing that these same champions do not act in accordance with this belief, for they try to follow a hard and fast rule that is supposed to differentiate absolutely between the two concepts. "Intergradation" is the magic touchstone that is to be applied, and the successful application of this test—the success itself open to various interpretations—can bring into the same category such disputable variants as *Coccyzus americanus americanus* and *C. a. occidentalis* on the one hand, and entities as distinct as *Psaltriparus minimus* and *P. plumbeus* on the other.

I have been working of late on a group of birds, the Geospizidae of the Galapagos Archipelago, where about forty distinguishable forms may be recognized, scattered over many islands. These birds vary in diverse ways, conspicuously so as to bill character. The extremes, from a bill as heavy as that of the clumsiest grosbeak to one as slender as a warbler's, are so different as to have caused their possessors formerly to be classed in different families, the Fringillidae and the Mniotillidae, yet between those extremes intergradation exists that could be warped into justification of subspecific union of the whole forty odd distinguishable forms. I have no hesitation in ignoring here any such criterion as the intergradation test in favor of an arrangement on another basis that results in a much clearer exposition of conditions than could be obtained from a trinomialized catalogue of names.

More and more of recent years have groups of American (Nearctic) birds been specifically linked with Old World (Palearctic) forms, such as the goshawks, harriers, pipits, creepers, and kinglets; and, conversely, certain European ornithologists have seen in some Old World birds close linkage with species that are perhaps more extensively developed in America. Once the fashion is set in matters of this sort it is easy to find followers who will push the innovation to the farthest extreme, and without any painstaking verification of evidence.

Our American Brown Creeper may truly be a subspecies of the European *Certhia familiaris*. At the same time there are two distinct species of Brown Creepers existing together in parts of Europe,—and who is there familiar with all three forms in life who can give us intelligent observations and deductions on probable relationships? Our American Pipit has been classed of late as a subspecies of the Old World *Anthus spinolella*. A specimen of *Anthus spinolella japonica* collected in Alaska from a flock of American Pipits was picked out instantly by the collector through the appearance and actions of the living bird, yet it takes a keen eye quickly to distinguish the prepared skin. I confidently await more testimony from competent witnesses who are familiar with both forms in life and in the museum, in the conviction that they should be regarded as distinct species. In some American flycatchers of the genus *Empidonax* specific characters are such, as

between *E. wrighti* and *E. hammondi*, for example, that if one were European in distribution they would assuredly be regarded as two subspecies of one species. Such is the fashion.

My argument implies nothing so ridiculous as a denial of the existence of intergradation between various forms of birds. It is there, it is to be recognized as a feature to be weighed in adjudicating the relationships of forms. But it is by no means the only important factor in variation, and every sort of variation should not be twisted and forced to fit in with a theory that requires the presence there of intermediate conditions. Nor has my protest against this sort of formulated procedure anything to do with the stabilization of our nomenclature, which is another matter, governed by certain common understandings, "laws" if you wish, that I am anxious to uphold. But I am not at all anxious to be uniformly "consistent" otherwise in the published presentation of observed facts.

It all comes to this, that pursuit of such a study as ornithology is not a game, to be won or lost according to set rules. We are painfully acquiring facts, endeavoring to apply these facts, and trying to convey our ideas to each other. To hold ourselves bound to certain iron-clad conventions, to a fetish such as the concept of intergradation may become, is to risk having American conduct of ornithological research subject to as cynical contempt from the disinterested observer as has been the meed of American legal procedure in the criminal courts, and from just about the same cause—an unworthy regard for the letter of the law as opposed to the spirit thereof.

California Academy of Sciences, San Francisco, May 16, 1931.

THE TYPE LOCALITY OF THE VERDIN

By JOSEPH GRINNELL

The Verdin, as a species, was named first by the Swedish ornithologist, Prof. Carl Sundevall (*Öfv. K. Vet.-Akad. Förh.*, 7, May 8, 1850, footnote, pp. 129-130). He called it *Ægithalus flaviceps*, and the basis of his description, written entirely in Latin, was stated to be a bird from either Sitka or California, collected by Dr. R. F. Sahlberg. Of course "Sitka" was out of the question, on distributional grounds; the remaining type locality, "California", though vague at best, in its early application, brought the case into the scope of the chore I had set for myself in recent years, that of trying to run down the type localities of all the birds ever named from California.

Having gone through the literature accessible to me I got no better clue to a more satisfactory designation of type locality than the suggestive statement of Walter E. Bryant (*Zoe*, 1, 1890, p. 150) that Sundevall described his bird "from Mexico." I now place considerable significance on this latterly supposed "mistake" of Bryant's; for he was associated at the California Academy of Sciences with an alert group of entomologists (Dr. H. H. Behr, for example) who doubtless knew a lot about the itineraries of the early insect-collectors on the Pacific coast. At any rate, Bryant proves to have been right in refusing to use the name *flaviceps* for the birds he had before him from southern California. His real slip was in selecting an untenable name for the race represented by them.

Running across Gyldenstolpe's paper on "Types of Birds in the Royal Natural History Museum in Stockholm" (*Arkiv för Zoologi*, 19, 1926, 116 pp.) and finding no mention of the Verdin, though others of Sundevall's types are dealt with therein, I decided to write to Count Nils Gyldenstolpe, himself; and this was most fortunate, as I might have anticipated. For here was an active explorer in the very field of enquiry in which I was essaying to penetrate. My enquiries brought the following information.

Count Gyldenstolpe wrote me under date May 22, 1930, in essence as follows: "The type specimen of Sundevall's *Ægithalus flaviceps* is not in our collections [at Stockholm]. It is, however, probably in the Zoological Museum in Helsingfors, Finland, and I am going to write to one of my friends there asking him for further information. According to Sundevall's original description it was collected by Dr. R. F. Sahlberg. Sundevall had numerous specimens of birds sent to him for examination and determination that had been collected by [or that came through] Sahlberg in California, Sitka and central Asia, some of which are still in our collections, apparently acquired either by exchange or purchase. It therefore seems highly possible that the type was returned to Sahlberg and it may have been handed over by him to the Helsingfors Museum. . . ."

Under date December 2, 1930, Count Gyldenstolpe wrote me further: "Yesterday I at last received a letter from Dr. I. Välikangas of the Zoological Museum in Helsingfors In the collections there, according to Dr. Välikangas, there are only two specimens of *Auriparus flaviceps*, one of which may be the type. The label of this latter specimen is, however, almost worthless; besides the name and the Museum number there is something written which has been impossible to read, and he has not succeeded in finding the number in their old catalogs. . . . A near relative of Dr. Sahlberg—his great grandson, Professor Saalas—has published in Finnish a work about Dr. Sahlberg's travels. He has told Dr. Välikangas that

Dr. Sahlberg himself never visited California. He [the latter], however, sent his taxidermist there, but this man died there almost at once. Sahlberg is said to have received some material from California through a Russian taxidermist, Vosnesenski. . . ."

The second specimen of Verdin in the Helsingfors Museum, as further stated in Count Gyldenstolpe's second letter, was presented to that Museum in September, 1861, by one Lindholm, captain of a merchant ship. The bird had been taken at "Port Escondido", Gulf of California, and was one of a small number of birds which had been "determined by John Xantus." Of course this bird is out of the running for typeship, because of its arrival many years after the date of Sundevall's description; but I wonder if it and the accompanying birds were not actually collected as well as named by Xantus, who was so actively at work in Lower California off and on from 1858 to 1861, inclusive.

Acting upon Count Gyldenstolpe's suggestion, I then wrote direct to Dr. Välikangas, of Helsingfors, from whom I received a most painstaking letter, dated March 13, 1931. Even though this letter repeats some of the information already received through Count Gyldenstolpe I now quote the whole gist of it, inasmuch as certain additional angles of the case are brought in.

" . . . Prof. R. F. Sahlberg made his South and North American voyage in 1839-43. He did not visit California himself, but stayed at Sitka. But a Russian preparator, Vosnoisensky (from the Russian Academy of Sciences) was in California where [?] he soon died. His collections were (at least partly) given to Sahlberg. The incomplete notes on the etiquette [label] suggest that the bird now in question [the supposed type of Sundevall's *Æ. flaviceps*] belonged to Vosnoisensky's materials from California and not to Sahlberg's materials from Sitka. . . . We have not been able to find the specimen [listed] in the small and defective parts of our catalogues of that early period. The Museum and the whole National University was earlier located in the former capital, Åbo, but was burnt down in this town's fire in 1829. After that the University was removed to Helsingfors where little by little the Zoological Museum was restored again. Prof. Sahlberg's grandson, the present professor in agricultural and forest zoology in Helsingfors, U. Saalas, who has published his grandfather's books of travel, has informed [me] that among the American notes nothing about this specimen has been found. On the contrary [on the other hand], the note Nr. 11 on the etiquette seems to be written by [that is, is in the handwriting of] Sahlberg, and the very etiquette shows a clear likeness with [to] many of Sahlberg's etiquettes [labels on specimens] from his American journey."

"We think it is very possible", Dr. Välikangas goes on to say, "that the specimen in question is Sundevall's type specimen, but until further at least, it [this] cannot be proved positively. I will, however, send you the specimen for examination. It is followed [accompanied] by two etiquettes. The bigger one has no particular importance; it is only written on it that the bird was stuffed in 1882 after having been earlier kept as a skin. The smaller etiquette has also some unreadable passages. If you have at your disposal there some chemical or other stuff to make the etiquette clearer, you can do as you like . . .".

A little later the precious specimen reached Berkeley safely, and the degree of my elation, and the corresponding degree of my feeling of gratitude toward Dr. Välikangas for forwarding it, can be imagined. For now I could myself make direct comparisons of this supposed type with the original description and with

series of Verdins from different parts of the general range of the species. Meanwhile evidence, of further historical bearing, from published sources, came to my attention, and before giving my findings in regard to the specimen itself I will present these.

It happens that there has just appeared in American print some information concerning Vosnesensky which is of great importance in the present connection. This is contained in a book under the authorship of Professor E. O. Essig, of the University of California, entitled "A History of Entomology" (Macmillan, 1931, 1029 pp., 263 figs. in text). I select certain facts and quotations from this account (pp. 777-789) as follows:

Ilya Gavrilovich Vosnesensky (1816-1871) was a "naturalist and conserver of the Zoological Museum of the Academy of Natural Sciences, St. Petersburg." He was remarkably gifted as an all-round field-collector, not only of insects but of vertebrate animals, plants, minerals and ethnological materials. In 1839, he was sent out to collect for the Academy in the Far Eastern Russian possessions, and was occupied thus for some ten years. In 1840 and 1841 his headquarters were at Fort Ross (Sonoma County, California), but he did not explore any part of the territory now comprised in the State of California south of San Francisco. He had left Russia for northwest America in August, 1839, on the steamer *Nicholas I*, stopped a while at Rio de Janeiro and at Valparaiso, and reached Sitka, May 1, 1840. His fellow-passengers included "Salbers [= Sahlberg], a physician, and Zigneus, a priest." From Sitka (or "New Archangel") he "reached the coast of New Albion, the Ross Colony, July 20th," 1840, returning to Sitka, October 4, 1841, when the Russian settlement in California was abandoned. "In the same year [translated from statement made by Vosnesensky himself a few years later], November 23rd, I started on a sea voyage to Lower California where I visited the vicinities of Loreto, Escondido Harbor, and Carmen Island, and returned to New Archangel March 19th, 1842."

It is further said of Vosnesensky that "he taught many persons living in those countries [that he visited] the art of the preparation and preservation of the specimens and they, according to his instruction, still are collecting various natural objects for the Academy." Also: "The variety of his collections and their abundance made, and still makes, it possible for the Museum of Zoology to exchange its duplicates with foreign museums, thus, in spite of its scanty means, always enriching its collections with new specimens." Again: "To his indefatigable work the Museum is indebted for the excellent condition of the most valuable specimens of birds and animals, which were not damaged or injured by moths in spite of the meagre means of their preservation." Vosnesensky did not, it is thus seen, die in California, but returned, though in poor health, to St. Petersburg in 1849, where he held important positions in the Museum until his death there, in 1871.

All of the above facts and many more, dug up by Professor Essig, are cited by him from Russian literature. It would appear that Vosnesensky may have been the collector of numbers of birds, besides the Verdin, from Lower California. If personally taken by him, these birds came from within a very limited radius on the Gulf coast at latitude 26°; Carmen Island and Port Escondido are close to Loreto. As far as I know, this source of Lower California materials, thus sixteen years prior to Xantus's first visit, has not heretofore been alluded to in American literature. One cannot help but wonder as to what other important early records there may be in Old-World literature; for of course "California" up to the 40's was primarily Lower California when not the whole Pacific Coast south of "Oregon".

Further published testimony is forthcoming, significant because contemporary, under the authorship of the celebrated entomologist, Mannerheim (Beitrag zur Kaefer-Fauna der Aleutischen Inseln, der Insel Sitka und Neu-Californiens, Bull. Naturforsch. Gesell. Moscou [sic], Band 16, 1843, p. 7 [of reprint or separate in possession of Dr. E. C. Van Dyke of the University of California who called my attention to it and who kindly loaned it to me]). Carl Gustav von Mannerheim (1804-1854), who for a time was governor of Finland, described (*fide* Essig, *loc. cit.*, p. 698) "a great number of beetles from Siberia, Alaska, and California, particularly many of those collected by J. F. Eschscholtz, . . . I. G. Vosnesensky, . . . Fred Sahlberg (Alaska)" and others. Mannerheim states in the paper cited that Ferdinand Sahlberg, doctor of Medicine, accompanied an official of the Russian-American Company to Sitka in 1839, going *via* Brazil and Chili; himself stayed a whole year at Sitka, collecting beetles; had at the outset as a fellow traveler, "Wosnesensky"; and the latter sent in collections from Sitka and California. There is no indication that Sahlberg collected anything in "California", only that Vosnesensky did.

Van Rossem (Trans. San Diego Soc. Nat. Hist., 6, 1930, p. 200) has "designated" Fort Yuma as the type locality for *Auriparus flaviceps*. While restriction from a vaguely indicated or general type region, as in the present case, is quite desirable, such restriction must have regard for not only facts but for probabilities; a locality not likely visited by the collector of the type is not properly to be chosen. In the present case, irrespective of other historical evidence, it is hardly probable that Sahlberg or any other European collector could have visited *Fort Yuma* prior to 1850. Indeed, it was not until 1850, with the beginning of immigrant traffic from the East by the Gila River route, that *Fort Yuma* was established (see Ives' Report upon the Colorado River of the West, 1861, p. 20). Visitation of California, and of the Pacific coast region of North America generally, was at sea-ports. No sea-port north of Lower California would have yielded a Verdin in the 40's without an exceedingly forbidding trip into the interior.

Now as to the specimen that all the evidence indicates to be the type: It is mounted (usual passerine perching posture) on a natural twig, a glass eye in right side of head, none in opposite eye-socket; the toes of left foot are broken; extreme tips of closed mandibles are blunted by breakage; the plumage on the throat and left side of face is rough, some of the feathers reversed; plumage somewhat worn in appearance, like that of recently collected birds taken in late winter or spring; plumage in general obviously sooted, due to long exposure to smoky air in the museum, this doubtless having darkened and dulled the original tones of color; marked fading not in evidence, at least as not compensated for by the sootting, save for a faint tendency to brown on wings and tail.

Of the two labels one, the larger, attached by thread to the perch, is the one referred to by Dr. Välikangas as stating only that the bird was, in 1882, mounted from a skin. The other, obviously much the older, label is small, only about 25 by 11 millimeters, on thin paper, threaded securely to the right tarsus. This label bears writing in ink on both sides, but not all clearly legible. On one side is: *Ægithalus* | (Regulus) | *flaviceps*" and another word not made out; and on the other: "Nº 11 | (Unº 470)" and vestiges of what might have been a sex-mark and other matter. This label is fragile, and I did not consider it safe to try to restore the writing as suggested by Dr. Välikangas; for it might have gone all to pieces.

Comparing this bird with Sundevall's original description, word for word, I find agreement in all respects save measurements. Sundevall's measurements are: Long. 100 mm. Ala 50; t. 15; c. 46. R. a. fr. 9; altit. 4. The corresponding measurements I get from the mounted bird as follows: Total length, 96; wing, left 50.7, right 50.9; tarsus, right 14.8; tail (from median base of central pair of rectrices), 44.4; bill from base at forehead, 7.9 (but extreme tip gone); depth of bill at base, 4. The slight discrepancies here apparent are not significant, for three reasons: (1) Sundevall was, it is fairly evident, content with round numbers; (2) two persons' methods of placing dividers might easily differ; (3) in mounting the bird from a skin changes were likely made in some of the dimensions.

As for coloration, Sundevall's terms (in Latin) apply to the Verdin as a species, and, it must be said, about as well to any one of its races as to another. There is nothing definitely to tie to, for subspecific assignment. But his measurements, in the light of the above comments, fall nearest the average of Lower Californian birds. The bird now supposed to be the type (evidently a male) as to color, save for the adventitious darkening of the plumage and a certain brown tone of wings and tail, belongs unquestionably to the Lower Californian race (*lamprocephalus* of Oberholser); it shows the deeper and more extensive yellow of the head and chest.

Since, as we have now seen, the type locality of Sundevall's species *flaviceps*, and hence of the subspecies it represents, *flaviceps flaviceps*, is narrowed down to the vicinity of Loreto, latitude 26°, Lower California, the subspecific name *ignatius*, of Huey (Trans. San Diego Soc. Nat. Hist., 6, 1930, pp. 211-212), based upon a specimen from San Ignacio, latitude 27° 17', must necessarily fall as a synonym of *flaviceps*. As to the propriety of distinguishing the birds of the "San Ignacio district" from those of the Cape district proper (south of Magdalena Bay) I am dubious, despite the many rather exaggerated terms employed by Huey—"beyond doubt . . . well worthy"; "decidedly darker"; "stand out boldly"; "striking difference"; "very much darker" (!). The fact is that a series of birds now before me from the vicinity of San Ignacio are only slightly and inconstantly different in either dimensions or color tone from Cape birds.

The Cape district birds, along with the birds included by Huey under his name "*ignatius*", have currently until Huey's naming all been covered by Oberholser's name *lamprocephalus* (type from Cape San Lucas). Certainly the main characters of *lamprocephalus* as defined by Oberholser (Auk, 14, 1897, p. 392) are common to the Verdins of the peninsula continuously from the Cape north to about latitude 30°. A slight tendency toward northward darkening, reaching its extreme at about 30°, is discernible; but to name separately the extremes in this gradient does not seem to me helpful. Furthermore, an awkwardness in applying names would be encountered, since now the type locality of *flaviceps* (= "*lamprocephalus*") is found to lie between the extremes of range.

I am thus led to go back to W. E. Bryant's solution of the case. Since the name *flaviceps*, just as he decided, was applied to a Mexican bird (that is, as the evidence now indicates, one from Lower California), and since, as shown by van Rossem (*op. cit.*, p. 201) and verified by me, Lawrence's name *ornatus* must be used for the recognizable race ranging from southern Texas to eastern Arizona, the race that Bryant characterized, from southeastern California and western Arizona (range in detail as given by van Rossem, *loc. cit.*, p. 200, under *flaviceps*) is left without a name. This I now supply as follows:

Auriparus flaviceps acaciarum, new name [acaciarum = of the thorn-bushes, that is, cat-claws].

Type.—Male; no. 38962, Mus. Vert. Zool.; Palm Springs, Riverside County, California; January 2, 1904; collected by J. Grinnell (orig. no. 5616).

Subspecific characters.—Similar to *Auriparus flaviceps flaviceps* (Sundevall), but with yellow of fore parts somewhat less intense and extensive; body color averaging a trifle browner, especially on dorsum; tail and wing, more notably the former, averaging a little longer; bill apparently averaging smaller. Similar to *A. f. ornatus* (Lawrence), but paler and a little smaller.

Specimens of this race, apparently upon the authority of Dr. Oberholser, have been recorded from the Colorado Desert under the name *lamprocephalus* (Coale, Auk, 31, 1914, p. 543; *id.*, 32, 1915, p. 106). Bryant (Zoe, 1, 1890, pp. 149-150) based his characterization of "ornatus" apparently upon specimens from "Los Angeles and San Diego counties" [not probably as now delimited], but including also his Lower Californian birds, and he distinguished them from Texan birds to which he restricted the name *flaviceps* on the grounds that Texan and Mexican birds must be alike, that Sundevall's type was "Mexican", and that Lawrence's name *ornatus* based on Texan birds must therefore be of "identical" application. Bryant apparently thought that he could transfer the name *ornatus* and use it appropriately for the western race.

In summary, the various lines of evidence set forth in this article tend to establish upon a basis of strong probability if not absolute finality the following things: That the type locality of *Auriparus flaviceps flaviceps* (Sundevall) is the vicinity of Loreto, latitude 26°, Lower California; that the type specimen was collected by I. G. Vosnesensky during his stay there between November 23, 1841, and March 19, 1842; that this type specimen passed into the hands of R. F. Sahlberg, at that time collecting beetles and other natural history materials at Sitka; that it later went into the Museum of the Universiy of Helsingfors, where it still remains; that it was loaned to Carl Sundevall, of Stockholm, prior to May, 1850, and made the basis of the latter's published description of his new species.

Museum of Vertebrate Zoology, University of California, Berkeley, May 3, 1931.

FROM FIELD AND STUDY

Birds Caught in Spiders' Webs.—Responding to the hurry call of one of my children about 7 a. m. on April 22, 1931, I found a live Coast Bush-tit (*Psaltriparus minimus minimus*) securely enmeshed in a spider's web close under the eaves of my two-story home in San Diego. Feebly struggling in the taut strands of the net, and silhouetted against the sky with one wing extended, the little bird's size, in this unusual situation, seemed magnified when viewed from a near-by window. Occasionally it responded to cries from the fellow members of its flock, which seemed to be remaining in the neighborhood. I took the bird in my hand and found it to be literally covered with the glutinous substance of the web. Not only were wing and tail feathers firmly stuck together, but the feathers of the breast and head were disarranged beyond remedy, and the toes of both feet were held tightly closed. The bird was evidently immature and was almost dead when liberated. After working for some time to remove the sticky webbing from its feathers, I determined that it would be impossible for it to live and therefore dispatched it.

Three other instances of birds being caught in spiders' webs have also come to my notice. In one case the bird, an Anna Hummingbird (*Calypte anna*), was found dead and brought to the San Diego Natural History Museum by one of the gardeners in Balboa Park. In the second case, also involving an Anna Hummingbird and occurring several years ago, the victim was discovered by J. W. Sefton, Jr., President of the San Diego Society of Natural History, caught, about six feet above the ground, in his garden on Point Loma; after being cleaned off, the bird was able to fly away. The third case was that of an adult female California Linnet (*Carpodacus mexicanus frontalis*) which Mr. Sefton found fluttering helplessly in one of the driveways of his garden on May 9, 1931. He picked it up and saw that the flight feathers of the left wing were securely attached by spider's webbing to the left foot. In his estimation the bird could never have disentangled itself, but with his aid it was able to proceed on its way.

In the Auk (XLVI, 1929, p. 123) George H. Mackay records the capture of an American Goldfinch in a spider's web in Massachusetts. The Linnet is even larger and stronger than the American Goldfinch and probably represents the maximum size of bird that could be so ensnared in this country.—CLINTON G. ABBOTT, *San Diego Society of Natural History, Balboa Park, San Diego, California, May 12, 1931.*

Some Additional Notes on James Hepburn.—When Mr. H. S. Swarth was working at the British Museum last year I showed him some information on James Hepburn and he suggested that I should send a note to the Condor to supplement the information he had published (Condor, XXVIII, 1926, p. 249).

James Hepburn or, to give his full name, James Edward Hepburn, appears to have dropped his second name after going to Cambridge. He was born in London in 1810 or 1811, and was the eldest son of James Hepburn of Tovil Place, Maidstone, England. He was educated privately in Sussex and, at the age of nineteen, was admitted a Pensioner of Trinity College, Cambridge, on December 20, 1830, taking his B.A. in 1835 and M.A. in 1838.

In 1835 he left Cambridge and went to London to study law and was admitted a student of the Inner Temple on January 15 of that year and, seven years later, on April 24, 1842, was called to the Bar. When he emigrated to California I have not been able to discover, but the earliest date mentioned in his American note books is 1852.

On April 16, 1869, Hepburn died suddenly at Victoria, Vancouver Island. In his will he is described as of "Tovil Place, Maidstone", but later of "California" and "Victoria, Vancouver". His collections were not mentioned in his will, but his relations, knowing that he had expressed a wish that they should go to Cambridge, presented them to the University in October, 1870.

Dr. J. W. Clarke, the Superintendent of the University Zoological Museum, in his report to the Museums and Lecture Rooms Syndicate dated February 8, 1871, described the collections as follows.

"In the course of last October term the Zoological Collections of the late James Hepburn Esq., were presented to the above Museum. This donation is of such importance that I feel it my duty to address to you a special Report on the Subject.

"Mr. Hepburn, originally a member of St. John's College¹, passed a great part of his life at San Francisco, where he made extensive collections, illustrative of the fauna of the Pacific seaboard from Alaska to Panama, and especially of Vancouver's Island, California and Sitka Sound. . . .

"Mr. Hepburn, having devoted most of his time to the study of Ornithology, it was to be expected that Birds would be best represented in his Collection. There are over 1500 skins, all in excellent condition, representing about 330 species, of most of which the series is extremely good, having, to all appearances, been selected to show the differences caused by sex, age, season or locality, particulars as to these points being carefully recorded in a MS. catalogue. They have been carefully examined, determined, and ticketed by M. Jules Verreaux, Aide-Naturaliste of the Museum of the Jardin des Plantes, Paris, and a Systematic Catalogue of the whole is in the course of preparation by Professor Newton. They are accompanied by a large collection of eggs and nests carefully identified and authenticated.

"Of mammals there is a small series, chiefly of skins, with two complete skeletons of the Northern Fur Seal (*Callorhinus ursinus*). These are of very great value, being so far as I know, the first skeletons of this seal that have been acquired by any European Museum.

"Of Reptiles, Amphibia, and Fish, there is a considerable number preserved in spirit.

"Of Invertebrata, there is a very large collection, consisting of Mollusca in spirit, shells, crustacea, and insects. The shells are all carefully marked with their names and localities, each species, of which there is often a long series, having generally a box devoted to itself. It has been impossible at present to estimate fully the extent of this portion of the Collection; but it certainly consists of many hundreds of species, selected, like the birds, under various conditions of age and locality.

"There is also a very interesting series of 28 skulls of Indians and a great quantity of arms, vessels, idols, and the like, illustrative of the habits of the Aborigines. . . .

"Besides the above Zoological Collections there is a small but important series of minerals, chiefly illustrating gold, and rocks in which it is deposited. There are also a few fossils.

"Mr. Hepburn's specimens have reached us in the most admirable condition and order, notwithstanding his sudden death, which, in the case of a less methodical naturalist, would have caused his collection to be left in a state of confusion."

I have given rather long extracts from Dr. Clarke's report, some of which does not pertain to ornithology, but with the object of showing the wide interests and carefulness of Hepburn in regard to natural history. In addition to the collections there are a number of note books at Cambridge in which Hepburn recorded the specimens he collected. Five of these books are devoted to birds, one to eggs and one to mammals. From the first of these note books it appears Hepburn shot his first bird in California at Martinez on May 6, 1852, and that he remained in San Francisco, visiting various localities, till the autumn of 1860, when he went to Vancouver Island, from where he made trips to the mainland, including Washington Territory and Sitka. He returned to San Francisco for short periods in 1861, '63, '64 and '65, but after 1860 his home seems to have been Vancouver Island.

Hepburn apparently was assisted by several people in making his collection and at the end of each year he gives a summary of the additions and how they were obtained. The results for the year 1853, for instance, are given as follows. "Shot 70, by W. Rhodham 13, by J. Scarle 3, by J. Attwood 2, by G. Meridith 2, by Aitken 1, found shot 1, new species 38".

From the note books I make out that the collection of bird skins was made up of 1016 from California, 353 from British Columbia, 136 from Washington Territory, 5 from Sitka; total, 1510. According to the egg note book Hepburn sent specimens to the Smithsonian Institution and H. E. Dresser. Hepburn also sent bird

¹ This was a mistake by Dr. Clarke for Trinity which as I have shown above was Hepburn's College.

skins to Sir William Jardine, and according to the latter's Catalogue he received at different times some forty-seven, most of which came from California.—N. B. KINNEAR, *British Museum Natural History, London*, April 24, 1931.

Brewer Blackbirds Roosting in Duck Blinds.—While hunting ducks in San Pablo Bay near San Francisco, California, January 12, 1931, on approaching a floating blind at daybreak I was surprised by the sudden flushing of a flock of thirty or forty Brewer Blackbirds (*Euphagus cyanocephalus*) from the blind. Visiting several other blinds I found each of them holding its quota of roosting blackbirds. That evening while I was still in the blind the birds came and attempted to roost. The blinds are of the floating type anchored to the bottom and covered thickly with eucalyptus boughs. The owner told me that he usually placed the blinds in the water about October 1 and that the blackbirds began to roost in them within two or three days. He places about twenty blinds. The birds habitually roost in all the blinds, the outermost being nearly a mile off-shore at high tide. The low tide leaves the mud-flats bare for about half that distance.—FRANK N. BASSETT, *San Francisco, California*, April 14, 1931.

Saw-whet Owl and California Woodpecker on Santa Cruz Island.—On April 15, 1931, the writer saw a Saw-whet Owl (*Cryptoglaux acadica*) near Pelican Harbor on Santa Cruz Island, California. The bird was flushed from some undergrowth at the bottom of a cañon and flew to a low limb of a large shrub. The writer was able to crawl to within eight feet of the bird, which was in partial sunlight. The bird remained in full view for as long as the writer cared to observe it.

During several botanizing trips in 1930, the writer noted California Woodpeckers at three widely separated points on Santa Cruz Island, one a few miles from Scorpion Harbor on the east end, a pair in the main cañon a mile below the ranch house, and three in a cañon one mile east of Valdez Harbor on the north shore. The pair near the ranch house has been noted again in 1931. The California Woodpecker (*Balanosphyra formicivora bairdi*) apparently has invaded the island only lately. Many former observers have been through the main cañon to the ranch house. It seems improbable that they could have missed this conspicuous and noisy bird, if any individual had been present.—RALPH HOFFMANN, *Santa Barbara, California*, April 25, 1931.

Northern Say Phoebe Records for Southern and Lower California.—In checking over the specimens of *Sayornis saya* contained in the collections of the San Diego Society of Natural History and of Laurence M. Huey, five dark specimens were found that did not match other skins in the series. These were submitted to Mr. H. S. Swarth of the California Academy of Sciences, who pronounced them *Sayornis saya yukonensis*. The localities at which most of these specimens were taken definitely add *yukonensis* to the known avifauna of Lower California.

The data of the birds are as follows: Collection of the San Diego Society of Natural History: no. 13455, El Rosario, Lower California, Mexico, female, September 27, 1930; no. 13522, Santa Rosalia Bay, Lower California, Mexico, female, October 18, 1930; no. 13546, San Andrés, Lower California, Mexico, male, October 23, 1930. Collection of Laurence M. Huey: no. 119, San Diego, California, male, January 1, 1914; no. 3288, Laguna Hansen, Lower California, Mexico, male, October 17, 1926.—LAURENCE M. HUEY, *San Diego Society of Natural History, Balboa Park, San Diego, California*, April 20, 1931.

EDITORIAL NOTES AND NEWS

The Sixth Annual Meeting of the Cooper Ornithological Club, held in Berkeley, May 15 to 17, 1931, was the most successful meeting in point of large attendance and of wide variety of features on its program, in the history of the Club. Those members not fortunate in having attended will find a full account of the meetings on pages 177 to 180 of this issue of the *Condor*, as provided by Governors' Secretary Storer.

We have now and then heard lament that more illustrations do not appear in the *Condor*. Aside from the ever-present pressure for economy (we cannot incur expense in excess of our income, every bit of which is used, as it is, for actual publication costs), the *Condor* is edited under a policy which discourages acceptance of pictures of birds merely because they are good photographs. Our policy, rather, just as with articles, is to use only such as really add to what has already been published in readily accessible books or ornithological journals. We aim not to duplicate subjects which have already been well illustrated in the thirty volumes of the *Condor* or in other magazines such as the *Auk*. What we do want, and hereby invite, are pictures showing new facts in bird behavior or in life histories. Pictures with real meaning, this fully pointed out in the legend as provided by the author of the accompanying article, are needed and will be welcomed.

As an example of what can be done for bird and mammal protection locally by one person, we cite the case of Amador County, California. In that County there has been in effect an ordinance of shortsighted effect, providing "payment of bounties on bluejays, magpies, hawks, foxes, wildcats and coons." Now, as of July 1, 1931, by unanimous vote of the County Supervisors, this ordinance is repealed. And the man who brought together and forcefully presented the facts that convinced those Supervisors of the wise course that they have now taken, was our fellow C. O. C. member, Mr. Henry Warrington, of Jackson. Congratulations to you, Mr. Warrington!

On June 13, 1931, Governor Rolph signed the bill making the "California Valley

Quail" the "avifaunal emblem" of California, in other words, our State Bird. If we are not mistaken, the idea which has now lead to this happy realization was first openly suggested in November, 1927, by our fellow Cooper Club member, Mrs. F. T. Bicknell of Los Angeles. Soon thereafter, the editor the *Condor* conducted a post-card vote of C. O. C. members, with the result that the California Valley Quail was given first choice; the California Condor came second, the Wrentit third, and the Western Bluebird fourth (see *Condor*, XXIX, 1927, p. 276, XXX, 1928, p. 194, XXXIII, 1931, p. 80). Many other organizations soon began to promote the idea and to take votes, with the California Valley Quail given first place right along. A State Committee was then formed, whose activities finally led to the introduction into the recent State Legislature, of the bill now signed. In these later activities, besides Mrs. Bicknell and others, Mr. C. A. Harwell, Mr. W. I. Follett and Mr. B. C. Cain have served notably and effectively.

A brief systematic paper of much more than usual interest for faunistics is that by Mr. A. J. van Rossem, entitled "Descriptions of New Birds from the Mountains of Southern Nevada" (Trans. San Diego Soc. Nat. Hist., vi, June 5, 1931, pp. 327-332). The Charleston and nearby Sheep mountains had never been worked by an ornithologist until Mr. van Rossem, in the interests of Mr. Donald R. Dickey, went there in 1930. As a first result, four new subspecies are now named, a Steller Jay, a Pigmy Nuthatch, a Brown Creeper, and a Junco. These clearly evidence Rocky Mountain relationships, rather than Sierra Nevadan. Further field work on the Charleston and contiguous mountain ranges is to be done before a final report will be published. This we await with expectation that it will help materially to explain some of the distributional puzzles at present pertaining to our understanding of the bird life along the eastern border of California.

Field work is under way at the present time in the interests of the Museum of Vertebrate Zoology, University of California, as follows: Mr. Chester C. Lamb

is continuing the program of general vertebrate collecting undertaken some years ago in Lower California; Mr. Raymond M. Gilmore is aboard the U. S. S. *Northland* for its season's cruise of the Bering Sea and Arctic coasts of Alaska, to take every opportunity to collect birds and mammals; Misses Annie M. Alexander and Louise Kellogg are visiting type localities of various mammals throughout the Rocky Mountain region; Dr. Jean M. Linsdale is making an ecological study of the vertebrates of the Toyabe Mountains, central Nevada; Dr. Alden H. Miller is exploring the Great Basin and Rocky Mountain regions for juncos; Dr. E. Raymond Hall, Mr. Ward C. Russell, Mr. Robert T. Orr, Mr. J. Kenneth Doutt, and Mr. Donald M. Hatfield are working a series of localities in southern and eastern Nevada, chiefly for mammals; and Mr. and Mrs. Thomas T. McCabe are continuing their field studies upon the birds and mammals of central British Columbia.

Animal distribution is not a matter of fixity or permanence, save perhaps as considered momentarily. Especially are the ranges of birds mobile affairs, constantly in flux; and the many factors involved—extrinsic, environmental, and internal, having to do with the bird's own mechanism—are immensely worth a student's while to seek out and to appraise in point of relative importance for different species. These ideas are brought out and emphasized in most convincing fashion by Dr. Herbert Friedmann, Curator of Birds in the United States National Museum, in a recent article of his entitled "Bird Distribution and Bird-Banding" (*Bird-Banding*, II, April, 1931, pp. 45-51). Dr. Friedmann points out that American students have a unique opportunity at the present time, of finding out the ways in which bird populations spread, by watching the behavior of the newly introduced European Starling. Some subjects of such observation—supplemented, it is suggested, by the bird-banding method—are as follows: Sex-ratio; single versus multiple broods; the actual distance from the original nest-site to the territories, next year, of the young from that nest; the effects of early versus late breeding seasons; the effects of inbreeding; the migration of groups within the species; determination of the extent of the feeding ranges and breeding territories. It is of great importance to the

systematist, to the student of faunas, to the general evolutionist, to learn such details as these concerning the process by which the boundaries of birds' ranges extend or retract in various directions and under different sets of conditions.

Since the appearance of Dr. Linsdale's article in May issue of the *Condor*, wherein were made public startling disclosures as to the extent of the use in California of that virulent poison, thallium, against rodents, numerous other facts along the same line have come to our attention. These all bring overwhelming conviction that poisoning of wild animals has come to be a highly destructive practice—when judged in the interests of the country at large. It seems to us now that the only justifying condition for employment of poison against animals other than rodents on cultivated ground, and rats and mice about buildings, is when bubonic plague or rabies or foot-and-mouth disease immediately threatens a locality. The Biological Survey, under whose auspices or with the cooperation of which, all or most of this poisoning is going on, works apparently with the immediate interests, only, of the agriculturist and stock man in view. And close analysis of the problem leads us to suspect that the ultimate best interests of even these minorities of our citizenry are not thereby being conserved. It is possible that the present administration of the government Bureau named, will change its policy, if enough other, less self-centered interests make known their claims for recognition, and especially the factual basis for their views. To this end, we would be glad to learn of further definite cases of, especially, poisoning of birds, any species whatsoever and under whatever auspices. Details of fact may be sent to the undersigned.—J. GRINNELL, *Museum of Vertebrate Zoology, Berkeley, California.*

PUBLICATIONS REVIEWED

WETMORE ON THE AVIFAUNA OF THE PLEISTOCENE IN FLORIDA.*—This recent paper by Dr. Wetmore is a major contribution to the avian paleontology of North America. It describes a collection which in wealth of material is second only to the Pleistocene deposits of California and

*The Avifauna of the Pleistocene in Florida. By Alexander Wetmore. Smithsonian Miscellaneous Collections, vol. 85, no. 2, pp. 1-41, 6 plates, 16 figures in text, April 13, 1931.

Oregon. The fossils from eight localities in Florida have been taken from sedimentary rocks near sea level or from caves. From this assemblage sixty-five forms have been identified, of which only three are extinct species, namely, *Querquedula floridana* Shufeldt, *Meleagris tridens* Wetmore, and *Teratornis merriami* L. Miller, thus indicating the stability of bird species through the Quaternary.

Several modern types present in the Pleistocene do not occur now in Florida. Perhaps the most outstanding of these is the California Condor which with *Teratornis* must have had a wide range, hitherto unknown, in the eastern part of the continent. The Wood Rail, *Aramides cajanea*, the Jabiru, and the Mexican Turkey Vulture, *Cathartes aura aura*, are tropical forms which occurred formerly in Florida. The subspecific identification of *C. a. aura* from the St. Petersburg locality is made on the basis of size; *C. a. septentrionalis* occurs in other of the horizons. The Manx Shearwater, Trumpeter Swan, Whooping Crane, and an indeterminate species of the South American *Geranoaetus* are other birds not found in the state today.

Most of the species identified are water birds, many of them of large size. Only five passerine birds are recorded, these being large corvids and icterids.

The fact that twenty-six of the types listed have not been reported before from the Pleistocene indicates the increase in knowledge as a result of this paper. Particularly is this fossil collection valuable in that it widens geographically our vision of the Pleistocene avifauna, representing adequately for the first time an eastern bird fauna of this period.

The bulk of the paper is devoted to an annotated list of the species with mention of the material and the places of occurrence. It would have been of great value to other workers in the field if more discussion of diagnostic characters used in identification had been included. These characters quite evidently, and of necessity, have been determined by the author and, although one does not feel the need of them as proofs for the identifications, it would have been useful to others to have placed certain of the osteological data on record.

Wetmore finds it necessary to use the name *jamaicensis* in place of the familiar

borealis for the Red-tailed Hawk, on the grounds of the synonymy of the two names and of page priority of *jamaicensis*. Regardless of the question of validity of this proposed change, it is disturbing to think of relinquishing the well-known name *borealis* for this common species.

The conservatism shown in the naming of new fossil types and in certain of the specific and subspecific identifications is, in the reviewer's estimation, admirable and leaves one with a feeling of security. Three supposed fossil species named by other writers have been found by Wetmore to be referable to modern species, thus aiding in the reduction of the number of dubious names that often encumber lists of fossil birds. The original description of *Meleagris tridens* appearing in this paper is based on one set of metatarsal spurs. Questions that might arise as to the advisability of naming a turkey on the spur characteristics of a single specimen seem to be fully anticipated by the author.—ALDEN H. MILLER, May 6, 1931.

S. PRENTISS BALDWIN AND BIRD-BANDING.*—After the lapse of a decade the Cleveland Museum has felt it worth while to devote the fifth number of its splendidly-appareled series to reprinting these classics of the experimental era of the study of birds by trapping and banding. Technical methods have come and often gone, the bander's horizon has expanded, but the sound common sense of these early papers has never been bettered, and, today as yesterday, after the old official "Instructions" and the newer "Manual", which, back in 1920, took their origin from Baldwin's doctrines as expounded to Lincoln at Thomasville, these papers remain the best philosophy of banding we have. Probably through someone's generosity, the present publication may be had by banders without cost, from the Biological Survey.—T. T. McCABE, May 28, 1931.

*Bird-banding by Systematic Trapping | by | S. Prentiss Baldwin | [Monogram] | Scientific Publications | of the | Cleveland Museum of Natural History | Vol. 1, No. 5, pp. 125-168; plates XIX-XXV | Issued, April 15, 1931 | Cleveland, Ohio | [to which is appended, without notice on cover or title-page, The Marriage Relations of the House Wren (*Troglodytes a. aedon*) by S. Prentiss Baldwin]. The first paper is reprinted from the Abstract of the Proceedings of the Linnaean Society of New York, No. 31, for 1918-1919, the second from the Auk, vol. XXXVIII, no. 2, April, 1921.

MINUTES OF COOPER CLUB
MEETINGS

SOUTHERN DIVISION

MARCH.—The regular monthly meeting of the Southern Division of the Cooper Ornithological Club was held Tuesday evening, March 31, 1931, at the Los Angeles Museum, Exposition Park, Los Angeles, with President Pemberton in the chair and about forty-five members and friends present. The minutes of the February meeting of the Southern Division were read and approved; the minutes of the February meeting of the Northern Division were read.

The following applications for membership were read: H. M. DuBois, 438 East 17th St. N, Portland, Oregon, proposed by Stanley G. Jewett; Harvey T. Anderson, Jr., 3062 Weldon Ave., Los Angeles, proposed by Loyer H. Miller; Blondel H. Carleton, 2421 Durant Ave., Berkeley, and Ronald B. Durrant, Terrace, British Columbia, Canada, both proposed by W. Lee Chambers.

A short note from Mrs. Edward C. Bull and family, expressing their appreciation of the resolution passed at the February meeting, was read. A letter from Tracy I. Storer in regard to the Conservation Committee of the Club was read.

There being no further business the meeting was turned over to the speaker of the evening, Dr. Henry Smith Williams. He first displayed a nest of the Anna Hummingbird, composed in part of materials furnished by himself, such as cotton, the fluff from a rug, and bits of feathers. His topic was "A New Theory of Migration" and his remarks covered a wide field, including the dispersal of young birds after leaving the nest, the migration route of the individual retracing the emigration route of the race, the shifting of the continents during past geologic ages, the Mendelian inheritance of the urge to follow certain migration routes, and the greater survival value of one route over another. His talk was illustrated by a number of charts and he also displayed a remarkable collection of nests of the Baltimore Oriole constructed for the most part of materials furnished by himself.

After some comments and discussion of various points in the talk, Dr. Williams explained that the nests were some of the results of eight years of experimenting, at his home in Connecticut, with furnishing nesting material for the orioles

and other birds. They show the change from nests containing only a small amount of the material furnished, to nests constructed entirely of soft wool yarn, some of various colors, and in one case entirely of white yarn. There was also a Kingbird's nest heavily festooned with long strips of white cloth.

The meeting was adjourned to allow further informal discussion and a closer examination of the nests.—JOHN MCB. ROBERTSON, *Secretary*.

APRIL.—The regular meeting of the Cooper Ornithological Club, Southern Division, was held at the Los Angeles Museum, Exposition Park, Los Angeles, April 28, 1931. Vice-President Harold Michener was in the chair and about fifty-five members and friends were present. The minutes of the March meeting of the Southern Division were read and approved; the minutes of the March meeting of the Northern Division were read.

Applications for membership were read as follows: H. Woodworth Kennedy, 1720 South Atlantic Blvd., Alhambra, proposed by A. van Rossem; Owen Brown, 438 Allendale Road, Pasadena, proposed by Harry Harris; George J. Kursinski, 1016 Winchester Ave., Alhambra, and Thomas B. Palamountain, 3011½ North Broadway, Los Angeles, both proposed by George G. Cantwell; Thomas Doane Hinshaw, 1908 Scottwood Ave., Ann Arbor, Michigan, proposed by W. Lee Chambers; and Mrs. Kenneth B. Wetherbee, 11 Dallas St., Worcester, Massachusetts, proposed by John McB. Robertson.

A letter was read from Jean M. Linsdale in regard to the Conservation Committee of the Cooper Club, stating that a great deal of information is available to anyone who wishes to take an active part in conservation work in California. No action was taken.

W. Lee Chambers called attention to Avifauna No. 20, which is now off the press and ready for delivery. It is the Third Ten Year Index to The Condor, and should be in the possession of everyone who has a file of The Condor for the years 1919 to 1928.

George Willett spoke of having a letter from A. B. Howell in regard to an effort to have the California Division of Fish and Game take a definite stand in regard to poison campaigns, and he stated that the Division has agreed to investigate the matter and to announce its stand when the facts are before it.

There being no further business to come before the meeting it was turned over to the speaker of the evening, Wright M. Pierce, who showed some interesting moving pictures of the nesting of the Golden Eagle. The first nest shown was in a eucalyptus tree, and when this nest was destroyed by some vandal before the eggs hatched, the scene was shifted to a cliff nest on the Mohave Desert where the growth of a young eagle was shown. The food of these desert birds was shown to consist almost entirely of jack-rabbits and chuckwallas.

The speaker also exhibited four sets of Golden Eagles' eggs, showing the great variation in size and markings of the eggs. Mr. Pierce stated that he had been unable to complete this series of films because the eagles were not breeding this season in some of their usual locations, although the birds are present. No reason for this condition could be given. After a number of questions and some discussion of the food and habits of the Golden Eagle, the meeting was adjourned.—JOHN MCB. ROBERTSON, *Secretary*.

MAY.—The regular meeting of the Cooper Ornithological Club, Southern Division, was held Tuesday evening, May 26, 1931, at the Los Angeles Museum, Exposition Park, Los Angeles, California, with President Pemberton in the chair and about twenty-five members and friends present. The minutes of the April meeting of the Southern Division were read and approved; the minutes of the April meeting of the Northern Division were read.

The application for membership of Dr. B. Boynton Filer, 2227 E. Hawthorne St., Tucson, Arizona, proposed by Walter P. Taylor, was read.

A letter was read from J. Murray Luck, Secretary, Pacific Division, A. A. A. S., announcing a meeting of the Affiliation Committee to be held in Pasadena, Tuesday, June 16, 1931, at 5 p. m., and asking that two members be appointed to represent the Cooper Club at that meeting. A motion was made, seconded and carried, that A. van Rossem and William H. Burt be appointed to represent the Cooper Club at that meeting, and that the Secretary be instructed to inform them of the action of the Club.

A letter was read from George S. Myers, Secretary-Treasurer of the Western Di-

vision of the American Society of Ichthyologists and Herpetologists, calling attention to their annual meeting, to be held at the California Institute of Technology, Pasadena, California, on the afternoon of June 16, and inviting all Cooper Club members to attend. It was moved, seconded and carried that we accept the invitation, and that the Secretary inform Mr. Myers of our appreciation and acceptance of the invitation.

George Willett spoke of an article in a recent issue of *Nature Magazine* about the proposed Federal Bird Reserve on the Salton Sea. Discussion brought out the fact that no one seems to know just what the boundaries of this reserve are to be, so it was moved, seconded and carried that W. Lee Chambers be appointed a committee of one, to find out just what area is to be included in the reserve, and to report at the next meeting.

George Willett spoke of how enjoyable the recent Sixth Annual Meeting of the Cooper Club, in Berkeley, was to all who were able to attend. He also commented briefly on a number of papers that were given, and mentioned the decision of the Board of Governors to hold the next annual meeting in the Los Angeles region. Dr. Loya Miller spoke of how encouraging to the older generation of Cooper Club members was the appearance on the program of a number of young ornithologists just starting on their life's work. He also spoke of the preponderance of papers on territory over those on systematics. He urged the members of this Division to start preparing for the next meeting now.

After further brief comment on the Berkeley meeting by J. R. Pemberton and W. Lee Chambers, the meeting was adjourned.—JOHN MCB. ROBERTSON, *Secretary*.

NORTHERN DIVISION

APRIL.—The regular monthly meeting of the Cooper Ornithological Club, Northern Division, was held on Thursday evening, April 23, 1931, at 8:00 p. m., in Room 2003 Life Sciences Building, University of California, Berkeley, with about 125 members and guests in attendance and Vice-President Linsdale presiding. Minutes of the Northern Division for March were read and approved. Minutes of the Southern Division were read.

Proposals of new names for membership were: Miss Emma Haefner, 2510

Bancroft Way, Berkeley, by Paul F. Bunker; Miss Dorothy Hildebrand, Kelseyville, by Emily Smith; Miss Ruth A. Hoerl, 1128 S. Stanislaus St., Stockton, by Barbara Norris; Ernest H. Norrback, 130 Naples St., San Francisco, by Alden H. Miller; Helen (Mrs. A. B.) Thorntwaite, care of Mounted Police, Old Crow Detachment, Yukon Territory, via Fort Yukon, Alaska, by E. L. Sumner.

Mr. Cain announced that the last of the series of lectures sponsored by the Audubon Association of the Pacific would be a talk upon shore-birds by Mrs. G. E. Kelly on the evening of April 30. He cordially invited Cooper Club members to attend. A visit to the island in Lake Merritt was described by Mr. Cain. He reported that because of the depredations of gulls, ducks find it impossible to rear young on the island. Newly hatched mallards, however, when transferred to cages by the Park employees have grown to maturity. Two swans were found to be brooding together on a nest containing fourteen eggs. It was surmised that both birds were females. Steps are being taken, Mr. Cain stated, in accordance with Mr. Grinnell's suggestion, to remove exotic and crippled birds from the lake. A pelican bone found on the island was exhibited.

Mrs. James T. Allen reported that a Long-tailed Chat has been seen at Oak Springs on the Tunnel Road. Mr. Don C. Meadows commented upon the excellence of the salt marshes near El Cerrito Hill as a place in which to observe shore-birds, having himself recently seen many sandpipers, terns of several species, and four Bonaparte Gulls at that point.

Vice-President Linsdale announced that because the annual meeting of the Cooper Club will be held in Berkeley on May 15 to 17, no meeting will be held by the Northern Division on the fourth Thursday of that month.

The speaker of the evening was Mr. Milton P. Skinner, field naturalist, for many years resident in the Yellowstone National Park. Mr. Skinner's discussion of the "Birds of Yellowstone Park" was illustrated by lantern slides showing maps of the region, the prevalent trees, and photographs of various birds, and was supplemented by a description of the three main routes by which migratory birds reach the Park.

Adjourned.—HILDA W. GRINNELL, Secretary.

SIXTH ANNUAL MEETING

The Sixth Annual Meeting of the Cooper Ornithological Club was held in Berkeley, California, Friday and Saturday, May 15 and 16, 1931. The scientific sessions were held in Room 2503 Life Sciences Building, University of California. Registration of members and visitors began at 9 a. m. At 9:30 George M. Wright, President of the Northern Division, formally opened the meeting with a greeting and address of welcome to the members and guests assembled.

L. H. Miller, President of the Board of Governors responded to the welcome. A telegram was read from Stanley G. Jewett, expressing hope for the success of the meeting.

Approximately 80 persons were in attendance at each of the four scientific sessions and more than 200 were present at the evening showing of motion pictures.

Alden H. Miller described "The fossil passerine birds from the Pleistocene of Carpinteria, California", which include 21 species, 19 of which are in the local Recent fauna. In Pleistocene time the region evidently supported more forest cover. A. M. Woodbury described "Bird habitats in Zion Canyon, Utah", where the narrow gorge restricts many of the habitats. Colored lantern slides portrayed the details of various habitats. L. H. Miller described the "Ecology of the Carpinteria region in the Pleistocene" as indicated by avian fossils heretofore recovered. He now concludes that *Wetmoregyps daggetti* was a forest inhabiting species rather than a walking eagle as previously considered. John B. Price reported on "Flocking habits of *Zonotrichias* and further notes on Quail", continuing studies previously reported in the Condor, from banding and marking of trapped birds with paint. Artificial exchange of Valley Quail in the flocks indicates that the former do not normally exchange between flocks, nor do all transplanted quail return to their original flocks. Repeated trappings of crown sparrows has shown a somewhat wider degree of range for these birds. Mary M. Erickson reported upon "Territorial behavior in the Wren-tit". Most individuals and pairs have small ranges, and for breeding purposes their ranges are still further restricted. Invasion of the borders of a range by other Wren-tits is sometimes resisted at various seasons; other species of birds may be driven out of Wren-tit territories. Of 26 pairs

studied, the average territory was about 0.48 acre per pair. E. L. Sumner, Jr., described the "Behavior of nesting Red-tailed Hawks", with respect to five pairs on the Los Baños Game Refuge in Merced County, California, where territories for nesting are small in the presence of adjacent wide forage areas. Nests have been blown bodily out of trees by the prevailing high winds. Golden Eagles have been seen to fly inverted when attacked by Red-tailed Hawks. T. T. McCabe presented "Notes on western hermit thrushes", resulting from a critical study of this group in which particular difficulty has been found in separating the *guttata-sequoiensis* assemblage.

At the afternoon session on Friday, J. R. Pemberton presided.

W. E. Ritter discussed "Family and group relations in the California Wood-pecker", reporting a nest near Orinda attended by 3 males and 2 females where males were seen to both incubate and feed, 2 males having incubated in one nest at the same time. James Moffitt outlined "A survey of California water-fowl breeding grounds" now being carried on by him under the auspices of the California Division of Fish and Game. Contrary to opinion among sportsmen, the locally-reared population of ducks is believed to be a considerable part of the total winter population. Attention is being given to such factors as water relations, effect of flooding, burning of tules, and desirable types of food plants, and to the species of water-fowl most in need of encouragement. Canada Geese in Honey Lake Valley are nesting on broken-down tules and on tops of high hay stacks; artificial nesting sites on posts will be provided. John McB. Robertson described "Some changes in the bird life of western Orange County, California", where crows earlier were only diurnal visitors, chiefly in winter, but have been breeding since 1921, now commonly, in eucalyptus. California Jays and Coast Bush-tits have appeared. The Dwarf Cowbird first appeared in 1923 and is now common, parasitizing California Linnets. Burrowing Owls roost in irrigation standpipes and occasionally attempt nesting in such places. J. M. Linsdale reported on "Activities of Yellow-billed Magpies during the incubation period", which is of 18 days duration. The unit of organization is the pair, which is believed to remain together throughout the year. The nesting program in 1931

was a month earlier than in 1930. The song is audible up to 100 yards. The male forages as far as one-half mile from the nest and provides food for the incubating female. John G. Tyler read a number of "Natural history notes from early California newspapers", especially from the Mariposa Gazette. Ben H. Thompson gave a "Census of nesting birds on a small lake in Yellowstone National Park" near Lamar River. Yellow-headed Blackbirds, Mud-hens and Pied-billed Grebes constituted the dominant species.

At four o'clock the group adjourned to the new quarters of the Museum of Vertebrate Zoology on the west side of the Life Sciences Building where a series of exhibits was provided as follows: Birds in general, in charge of Miss M. W. Wythe; Woodpecker work, demonstrated by W. E. Ritter; Birds' nests and eggs, in charge of Miss M. M. Erickson; Shrikes of North America, demonstrated by A. H. Miller; Song Sparrows of the Pacific Coast, demonstrated by J. Grinnell; Bird-banding matériel, provided by the Western Bird-banding Association, in charge of T. T. McCabe and E. L. Sumner, Sr.; Reptile room, in charge of J. M. Linsdale; Perognathus, demonstrated by S. B. Benson; The Weasels of the Americas, demonstrated by E. R. Hall; The fur room, shown by A. E. Borell.

On Friday evening the Club members and their guests assembled in the auditorium of International House at Bancroft Way and Piedmont Avenue where a program of motion pictures on bird life was given. These included "Incidents in the life history of the Trumpeter Swan", in Yellowstone National Park, by Joseph Dixon, and "The life story of the House Wren in field and laboratory", by S. Prentiss Baldwin of Cleveland, Ohio, presented by E. Lowell Sumner, Jr.

On Saturday morning the session began at nine a. m. with J. G. Tyler presiding. Joseph Grinnell discussed "The type locality of the Verdin" and exhibited the original specimen used by Sundevall. By careful historical research and correspondence with European ornithologists, rather complete details concerning the type locality and original description of this species have been established. H. S. Swarth discussed "The tyranny of the trinomial", showing the difficulty involved in attempts to segregate rigidly in some cases between species and subspecies. A paper by L. B. Bishop on "Sexual dichro-

matism in the Pygmy Owl" was read by George Willett, showing that grayness of males and brownness of females are pronounced upon the borders of subspecific ranges. L. V. Compton presented a paper on "Valley Quail and the water problem", giving a résumé of earlier beliefs on this topic and a report of efforts to improve the opportunities for quail on the R. W. Hanna ranch at Payne Creek in Tehama County by supplying water from tanks, springs and seepage places and protecting this from livestock, together with furnishing brush cover appropriate for quail coming to drink. The "Acclimatization of alien birds in California" was presented in historical summary by T. I. Storer. Efforts in this direction began as early as 1860 and more than \$200,000 of state funds have been expended in efforts to establish alien game species, besides numerous private attempts with song birds. Mrs. M. E. McLellan Davidson described and illustrated the "Birds of a coffee finca", and R. H. Beck presented an illustrated account of some of his experiences in "Bird collecting south of the equator" where he spent a number of years on various oceanic islands, chiefly in the interests of the American Museum of Natural History.

At the afternoon session E. L. Sumner, Sr., gave "Notes on the longevity of some passerine birds". (Details are published in *The Condor*, xxxiii, 1931, p. 128.) G. M. Wright described "A bat-eating Sparrow Hawk" observed in the southwest. G. B. Pickwell presented "Some observations upon the Texas Nighthawk", dealing with habits of nesting adults in a small "island" of Lower Sonoran Zone near San Jose. An analysis of the behavior based on principles of recent development in the study of animal psychology was given. F. H. Fowler described his experiences on "Six week-ends with a family of Prairie Falcons", studied in the arid foothills of the central Coast Ranges, where by lowering a metal cage over a cliff to the vicinity of a nest he was able to obtain excellent close-up motion pictures of both young and adults during the growth period of the former. Both birds and mammals were fed to the young. This was followed by "Some Prairie Falcon studies", in motion pictures, made by W. M. Pierce on the Mojave Desert. The general character of the habitat, the manner of flight of the adults, and behavior of the young were illustrated. Food

there consisted largely of lizards. The afternoon program closed with a series of motion pictures and comments on the "Birds of the southern California Channel Islands" by J. R. Pemberton. The general character of the various islands, some of the changes in bird population which have been observed by various naturalists, and close views of various colonial species were included.

On Saturday evening Mr. and Mrs. George M. Wright entertained the members and guests at their residence, 1936 Thousand Oaks Boulevard, Berkeley, with a buffet supper. Following the supper, L. H. Miller gave a talk on "Rhythm in bird song", illustrating his thesis with imitations of the voices of various birds.

—TRACY I. STORER, *Secretary*.

GOVERNORS' MEETING

The Tenth Annual Meeting of the Board of Governors of the Cooper Ornithological Club was held at Berkeley, California, on May 17, 1931. The Board was entertained at breakfast at the residence of Professor and Mrs. James T. Allen, 37 Mosswood Road, by Mrs. Allen and Mrs. Grinnell. The business session convened at 10 a. m. with President L. H. Miller in the chair, and the following members present: Mrs. A. S. Allen, Mrs. H. W. Grinnell, Messrs. J. S. Appleton, Henry W. Carriger, W. Lee Chambers, J. S. Cooper, J. S. Dixon, Joseph Grinnell, C. B. Lastreto, J. M. Linsdale, Joseph Mailliard, Harold Michener, J. R. Pemberton, W. M. Pierce, G. C. Rich, J. McB. Robertson, T. I. Storer, J. G. Tyler, H. S. Swarth, George Willett, and G. M. Wright. The following members were represented by proxies: D. R. Dickey and Harry Harris by W. L. Chambers; H. C. Bryant by L. H. Miller; Ralph Arnold, H. L. Coggins, J. E. Law, G. F. Morecom and W. H. Osgood by T. I. Storer; W. B. Judson by H. S. Swarth; and L. B. Bishop by George Willett.

The minutes of the Ninth Annual Meeting were read and approved.

Report of the Business Managers was read and commented upon by J. McB. Robertson. January 1, 1930, the Club had 905 members; on January 1, 1931, 903 members. The Business Managers requested that the report be audited. A motion by Dixon, seconded by Mailliard, was passed authorizing the chair to appoint an auditing committee. The following committee was named: Lastreto, chairman; Cooper, G. M. Wright. On motion

by Storer, seconded by Pierce, the report was accepted, subject to the approval of the auditing committee.

The report of the Editors was presented by Joseph Grinnell. *Avifauna* no. 20, the third ten-year index to *The Condor*, was published on April 15, 1931, and has been distributed to subscribers. Several of the papers of the Sixth Annual Meeting are already in hand for publication in *The Condor*. Harry Harris is preparing a monograph on the California Condor to include a full historical account and all other available information concerning the bird. The Editors recommended that a special editor for this *Avifauna* be appointed by the President of the Board after conference with the author and the editors. A motion by Mailliard, seconded by Pemberton, granted the President the authority for this purpose. Question was raised as to whether the Editors should oppose general poison campaigns of state and federal agencies in the columns of *The Condor*. Upon motion by Willett, seconded by Pierce, the Board of Governors unqualifiedly endorsed the present editorial policy in respect to poison campaigns. The general report of the Editors was accepted upon motion by Rich, seconded by Mailliard.

A report on the proposed new constitution and by-laws was presented verbally by President Miller, who stated that delay in completion of incorporation had resulted from the illness of D. R. Dickey. W. L. Chambers pointed out that the Club can carry on all present activities legally, except it is unable, under the present constitution, to administer real property. On motion by Lastreto, seconded by Appleton, the existing committee on incorporation was instructed to study the problem of selection of a trustee to handle funds and property until incorporation should be effected. W. L. Chambers indicated the desirability of such action in view of promise of one or more bequests. A motion by Rich, seconded by Willett, that the report on incorporation be tabled was rejected. A motion by Grinnell, seconded by Mailliard, designated the present committee on incorporation to carry on the further work for completion of a new constitution.

Joseph Dixon reported as representative of the Club on the Council of the Associated Sportsmen's Clubs of California. He stated that the dues for affiliation would be raised to \$50 per year for

constituent organizations of more than 100 members. He recommended that, under these circumstances, the Cooper Club not renew membership. Upon motion by Pemberton, seconded by Pierce, the Board moved to terminate its affiliation with this organization.

President Miller had appointed a committee on resolutions consisting of Swarth and Storer, who tendered a series of resolutions in appreciation of courtesies extended to the Club and Board in connection with the 1931 meetings. These included the provision of a meeting place, ornithological exhibits and staff services by the Museum of Vertebrate Zoology; the hospitality of Mr. and Mrs. George M. Wright in entertaining the Club at their residence on Saturday evening; the hospitality of Prof. and Mrs. J. T. Allen in entertaining the Board at breakfast; the cooperation of the Western Bird-banding Association in exhibiting bird banding equipment and literature; and the assistance afforded by Mr. Frederick H. Fowler in the loan of a motion picture projector.

Discussion of the next place of meeting was initiated by the reading of a letter from Mr. C. G. Abbott inviting the Club to meet in San Diego in 1932. An invitation for a meeting in Tucson, Arizona, from Dr. W. P. Taylor was also presented. A motion to select Tucson as a meeting place was made by Pemberton and seconded by Pierce, but failed to carry because the majority of the Board felt that too small attendance would result. A motion by Rich, seconded by Mailliard, decided that the next annual meeting should be held in the Los Angeles area.

The Secretary presented a brief summary of the legislation affecting birds which had been introduced in the California Legislature in 1931.

Upon opening the nominations for officers a motion by Rich, seconded by Pierce, instructed the Secretary to cast a unanimous ballot for the present incumbents. With J. Mailliard in the chair, L. H. Miller nominated T. I. Storer for president. Upon ballot, L. H. Miller was elected president.

A motion to adjourn having been put forward, no vote was taken on the previous motion for election of officers; according to the provisions in the constitution, therefore, the officers of 1930-31 continue.

Adjourned at 12:30 p. m.—TRACY I. STORER, *Secretary*.



For Sale, Exchange and Want Column.—Any Cooper Club member is entitled to one advertising notice in each issue free. Notices of over ten lines will be charged for at the rate of 15 cents per line. For this department, address JOHN MCB. ROBERTSON, Buena Park, California.

FOR SALE OR TRADE—Hatt, the Biology of the Voles of New York, and, The Red Squirrel: Its Life History and Habits; Warren, The Beaver in Yellowstone National Park; Johnson, The Beaver in the Adirondacks, and, The Muskrat in New York; Skinner, Predatory and Fur-bearing Animals of Yellowstone Park; Cooke, Distribution and Migration of North American Gulls, etc., and, Bird Migration.—ROLAND CASE ROSS, 1820 Bushnell Ave., South Pasadena, California.

FOR EXCHANGE—I have the following sets to exchange for ornithological books: Bonaparte Gull 1-3, Richardson Pigeon Hawk 1-5, Lesser Yellow-legs 1-4, Stilt Sandpiper 1-4, Semipalmated Plover 2-4, Least Sandpiper 1-4, Lapland Longspur 1-5, White-crowned Sparrow 1-5, all personally collected.—FRANK L. FARLEY, Camrose, Alberta.

WANTED—A copy of The Birds of Western Canada, by Taverner.—GEORGE M. BENSON, Voltage, Oregon.

WANTED—Auk: Vol. I, nos. 2, 3, 4; vol. II, nos. 1 and 4. Condor, any before 1904.—WILLIAM G. FARGO, 506 Union St., Jackson, Michigan.

FOR EXCHANGE—Can use pairs or more of a number of North American birds. Offer well made skins of Costa Rican species of comparable value.—AUSTIN SMITH, Apartado 412, San Jose, Costa Rica.

WANTED IN EXCHANGE—One copy each of North American Amphibians and Reptiles, Stejneger and Barbour; and Reptiles of Western North America, Van Denburgh. Will give good exchange in specimens or publications on ornithology or mammalogy.—STANLEY G. JEWETT, 582 Bidwell Ave., Portland, Oregon.

WANTED—The Condor: Vols. 1 to 32, inclusive; Bird-Lore: Vols. 1 to 23, inclusive; The Auk: Vols. 1 to 41, inclusive; The Wilson Bulletin: Vols. 1 to 39, inclusive; The Oologist: Vols. 1 to 38, and nos. 1 to 7 of vol. 41; Bulletin of Northeastern Bird Banding Association: No. 4 of vol. 2; Bird Banding Notes: Nos. 1, 5 and 11.—LONY B. STRABALA, Leetonia, Ohio.

FOR SALE—About 750 bird and mammal skins, mostly from southern California, a few from other parts of the United States, and Canada. Will consider any offer, write for complete list.—R. H. COOMBS, 4245 Duquesne Ave., Culver City, California.

WE CAN ALLOW you \$15 or more on your old glass, to apply on the new and improved \$35 Mirakel, 7 power, 7 ounce pocket prism binocular. A few guaranteed used ones for \$19.50. Catalogue of all makes of new and used glasses sent on approval.—J. ALDEN LORING, Dept. CO, O-we-go, N. Y.

THE BIRDS OF WASHINGTON, by Dawson and Bowles, is now rare. One or two examples of the various editions, two volumes each, may still be had for prices ranging from \$35.00 to \$150.00.—MRS. FRANCES E. DAWSON, Santa Barbara, California.

WANTED—Lists of duplicates: books, magazines, or bulletins on natural science, especially on birds and mammals. I am in the market for many items not already included in my library.—JOHNSON A. NEFF, Bureau of Biological Survey, Marysville, California.

FOR SALE—The Condor: Vol. XVI, 1914, complete; vol. XVII, 1915, complete; vol. XXI, 1919, no. 3; vol. XXIII, 1921, no. 5; vol. XXX, 1928, no. 5; vol. XXXI, 1929, nos. 1, 3, 5 and 6; vol. XXXII, 1930, complete.—MARIE A. COMMONS, Tanager Hill, Crystal Bay, Minnesota.

WESTERN BIRD-BANDING ASSOCIATION

Recommends and Supplies

The new W.B.B.A. Two-compartment Trap; in the United States, west of Mississippi River,	\$1.50 postpaid
East of this river, and in Canada,	\$1.75 postpaid
With bottom, as gathering cage, add	\$0.25 postpaid
Michener Water (Warbler) Trap	\$5.00 postpaid
Four-compartment Folding Potter Trap	\$4.00 postpaid
Audubon Bird Cards, 3 sets, Spring, Summer, and Winter Birds, each	\$1.00 plus postage
Hoffmann's Birds of the Pacific States.	\$5.00 plus postage

WESTERN BIRD-BANDING ASSOCIATION, Museum of Vertebrate Zoology, Berkeley, California

